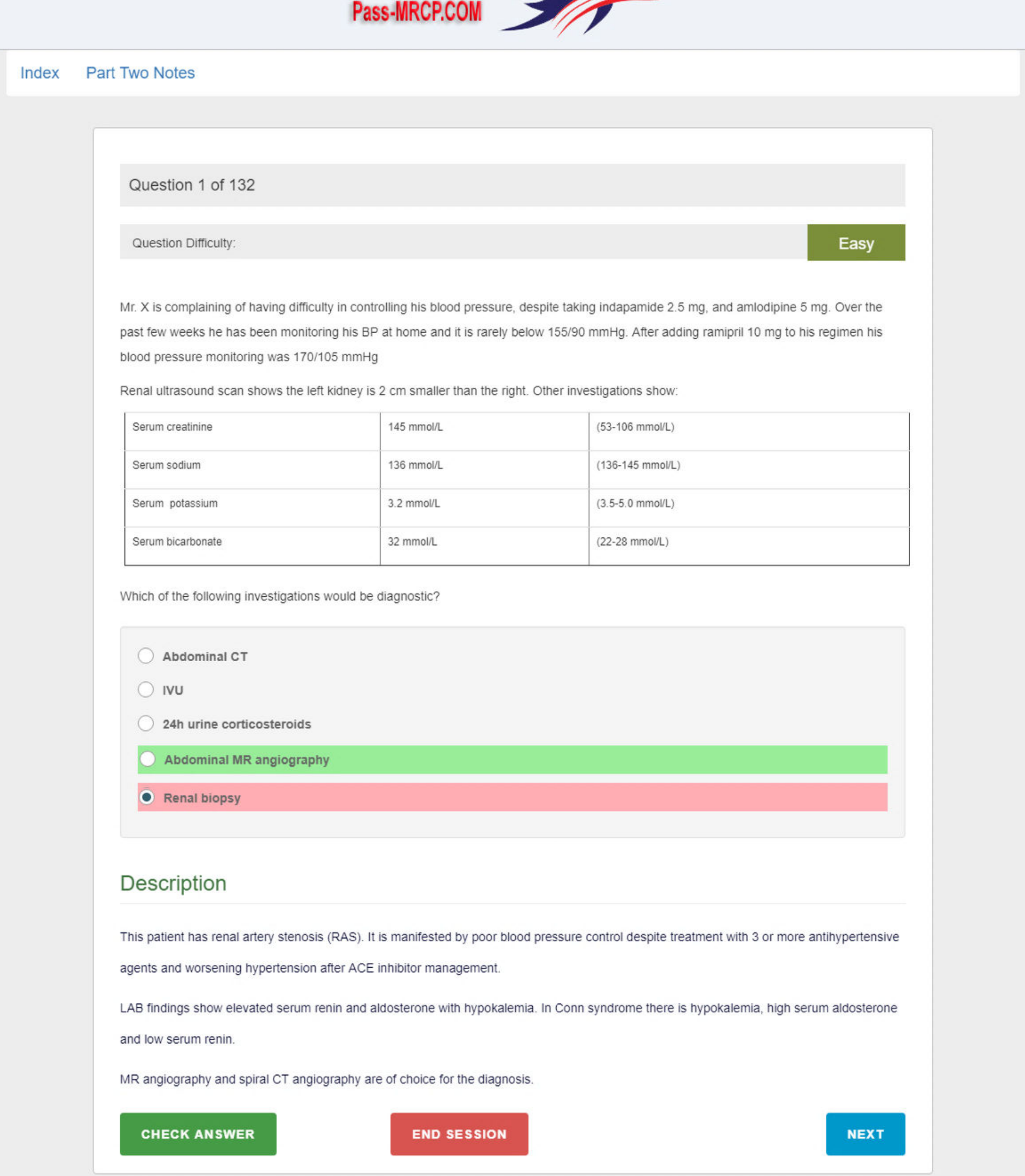


Question 1 of 132

Question Difficulty: **Easy**

Mr. X is complaining of having difficulty in controlling his blood pressure, despite taking indapamide 2.5 mg, and amlodipine 5 mg. Over the past few weeks he has been monitoring his BP at home and it is rarely below 155/90 mmHg. After adding ramipril 10 mg to his regimen his blood pressure monitoring was 170/105 mmHg

Renal ultrasound scan shows the left kidney is 2 cm smaller than the right. Other investigations show:

Serum creatinine	145 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	3.2 mmol/L	(3.5-5.0 mmol/L)
Serum bicarbonate	32 mmol/L	(22-28 mmol/L)

Which of the following investigations would be diagnostic?

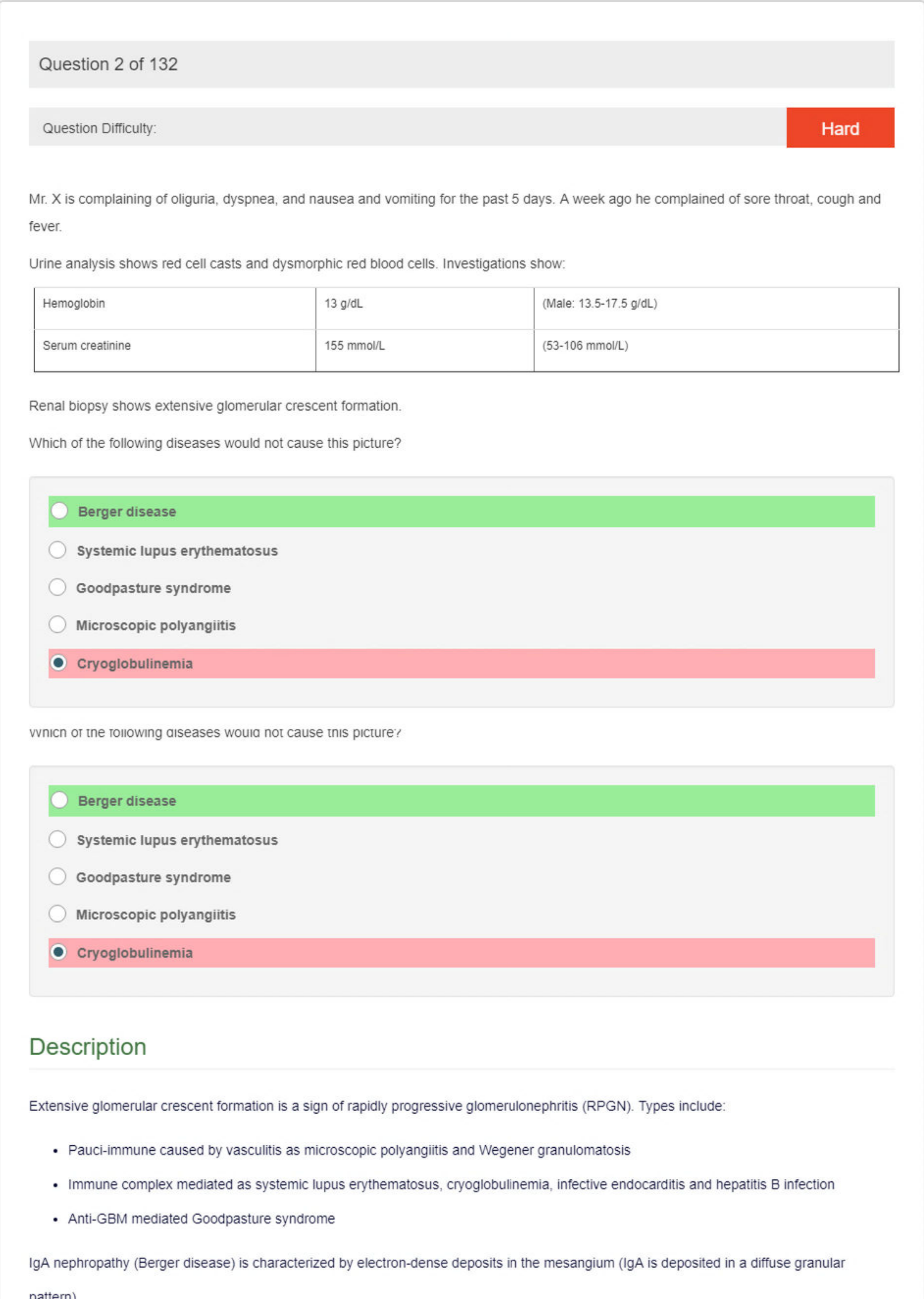
- ○ **Abdominal CT**
- ○ **IVU**
- ○ **24h urine corticosteroids**
- ○ **Abdominal MR angiography**
- ● **Renal biopsy**

Description

This patient has renal artery stenosis (RAS). It is manifested by poor blood pressure control despite treatment with 3 or more antihypertensive agents and worsening hypertension after ACE inhibitor management.

LAB findings show elevated serum renin and aldosterone with hypokalemia. In Conn syndrome there is hypokalemia, high serum aldosterone and low serum renin.

MR angiography and spiral CT angiography are of choice for the diagnosis.



Question 2 of 132

Question Difficulty: **Hard**

Mr. X is complaining of oliguria, dyspnea, and nausea and vomiting for the past 5 days. A week ago he complained of sore throat, cough and fever.

Urine analysis shows red cell casts and dysmorphic red blood cells. Investigations show:

Hemoglobin	13 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	155 mmol/L	(53-106 mmol/L)

Renal biopsy shows extensive glomerular crescent formation.

Which of the following diseases would not cause this picture?

- ○ **Berger disease**
- ○ **Systemic lupus erythematosus**
- ○ **Goodpasture syndrome**
- ○ **Microscopic polyangiitis**
- ● **Cryoglobulinemia**

Which of the following diseases would not cause this picture?

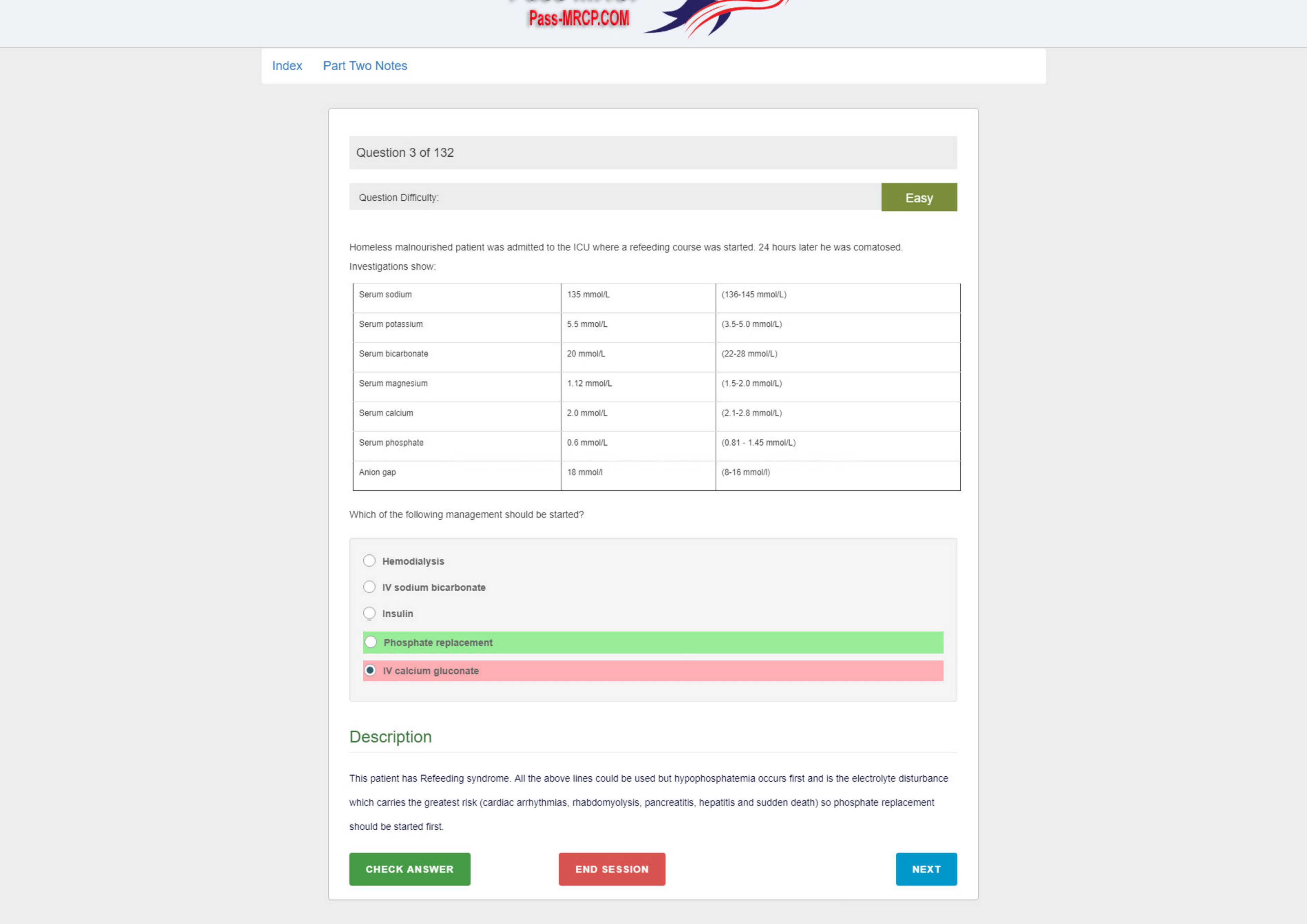
- ○ **Berger disease**
- ○ **Systemic lupus erythematosus**
- ○ **Goodpasture syndrome**
- ○ **Microscopic polyangiitis**
- ● **Cryoglobulinemia**

Description

Extensive glomerular crescent formation is a sign of rapidly progressive glomerulonephritis (RPGN). Types include:

- Pauci-immune caused by vasculitis as microscopic polyangiitis and Wegener granulomatosis
- Immune complex mediated as systemic lupus erythematosus, cryoglobulinemia, infective endocarditis and hepatitis B infection
- Anti-GBM mediated Goodpasture syndrome

IgA nephropathy (Berger disease) is characterized by electron-dense deposits in the mesangium (IgA is deposited in a diffuse granular pattern)



Question 3 of 132

Question Difficulty: **Easy**

Homeless malnourished patient was admitted to the ICU where a refeeding course was started. 24 hours later he was comatosed. Investigations show:

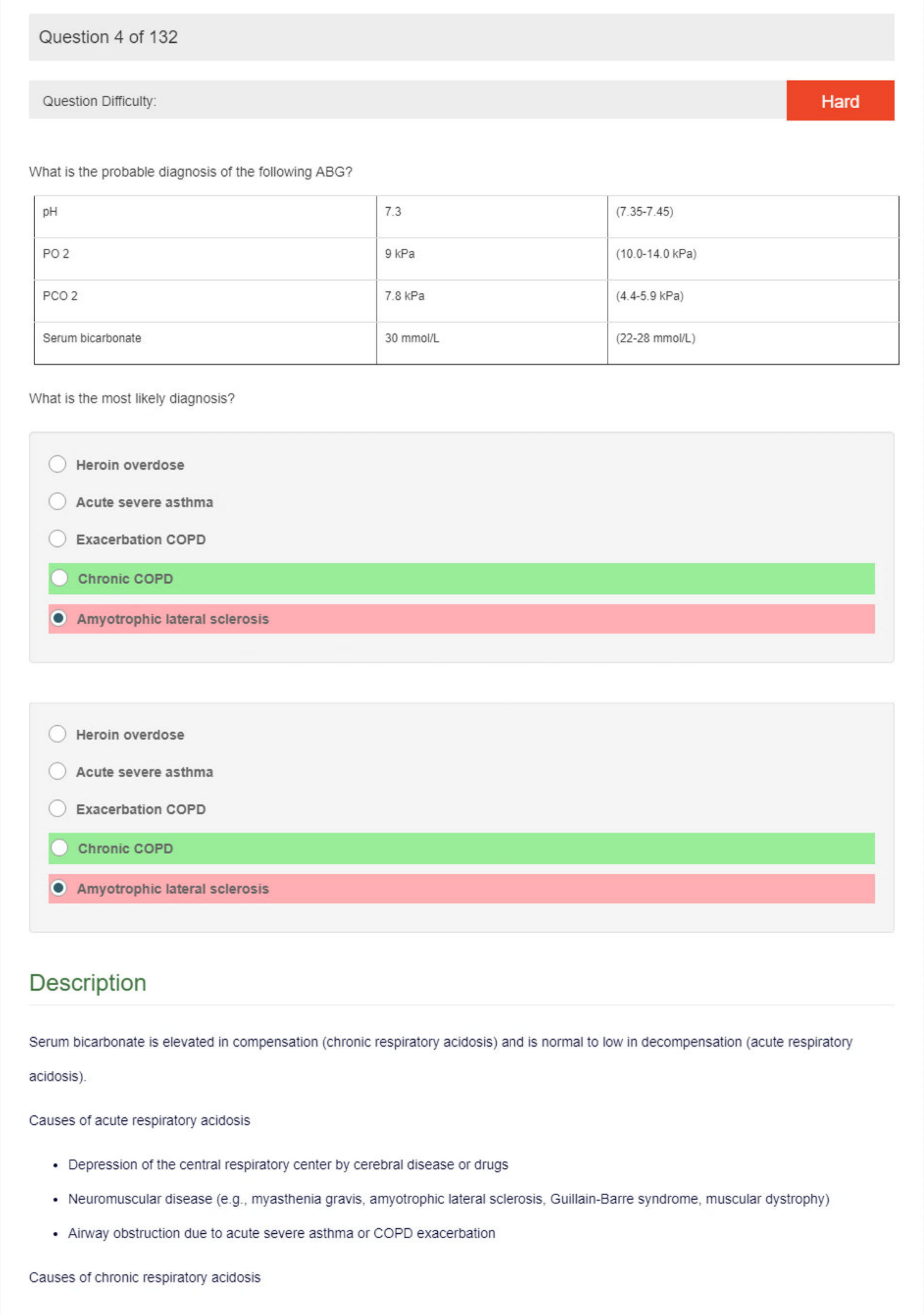
Serum sodium	135 mmol/L	(136-145 mmol/L)
Serum potassium	5.5 mmol/L	(3.5-5.0 mmol/L)
Serum bicarbonate	20 mmol/L	(22-28 mmol/L)
Serum magnesium	1.12 mmol/L	(1.5-2.0 mmol/L)
Serum calcium	2.0 mmol/L	(2.1-2.8 mmol/L)
Serum phosphate	0.6 mmol/L	(0.81 - 1.45 mmol/L)
Anion gap	18 mmol/l	(8-16 mmol/l)

Which of the following management should be started?

- ○ **Hemodialysis**
- ○ **IV sodium bicarbonate**
- ○ **Insulin**
- ○ **Phosphate replacement**
- ● **IV calcium gluconate**

Description

This patient has Refeeding syndrome. All the above lines could be used but hypophosphatemia occurs first and is the electrolyte disturbance which carries the greatest risk (cardiac arrhythmias, rhabdomyolysis, pancreatitis, hepatitis and sudden death) so phosphate replacement should be started first.



Question 4 of 132

Question Difficulty: **Hard**

What is the probable diagnosis of the following ABG?

pH	7.3	(7.35-7.45)
PO 2	9 kPa	(10.0-14.0 kPa)
PCO 2	7.8 kPa	(4.4-5.9 kPa)
Serum bicarbonate	30 mmol/L	(22-28 mmol/L)

What is the most likely diagnosis?

○ **Heroin overdose**
○ **Acute severe asthma**
○ **Exacerbation COPD**
○ **Chronic COPD**
● **Amyotrophic lateral sclerosis**

○ **Heroin overdose**
○ **Acute severe asthma**
○ **Exacerbation COPD**
○ **Chronic COPD**
● **Amyotrophic lateral sclerosis**

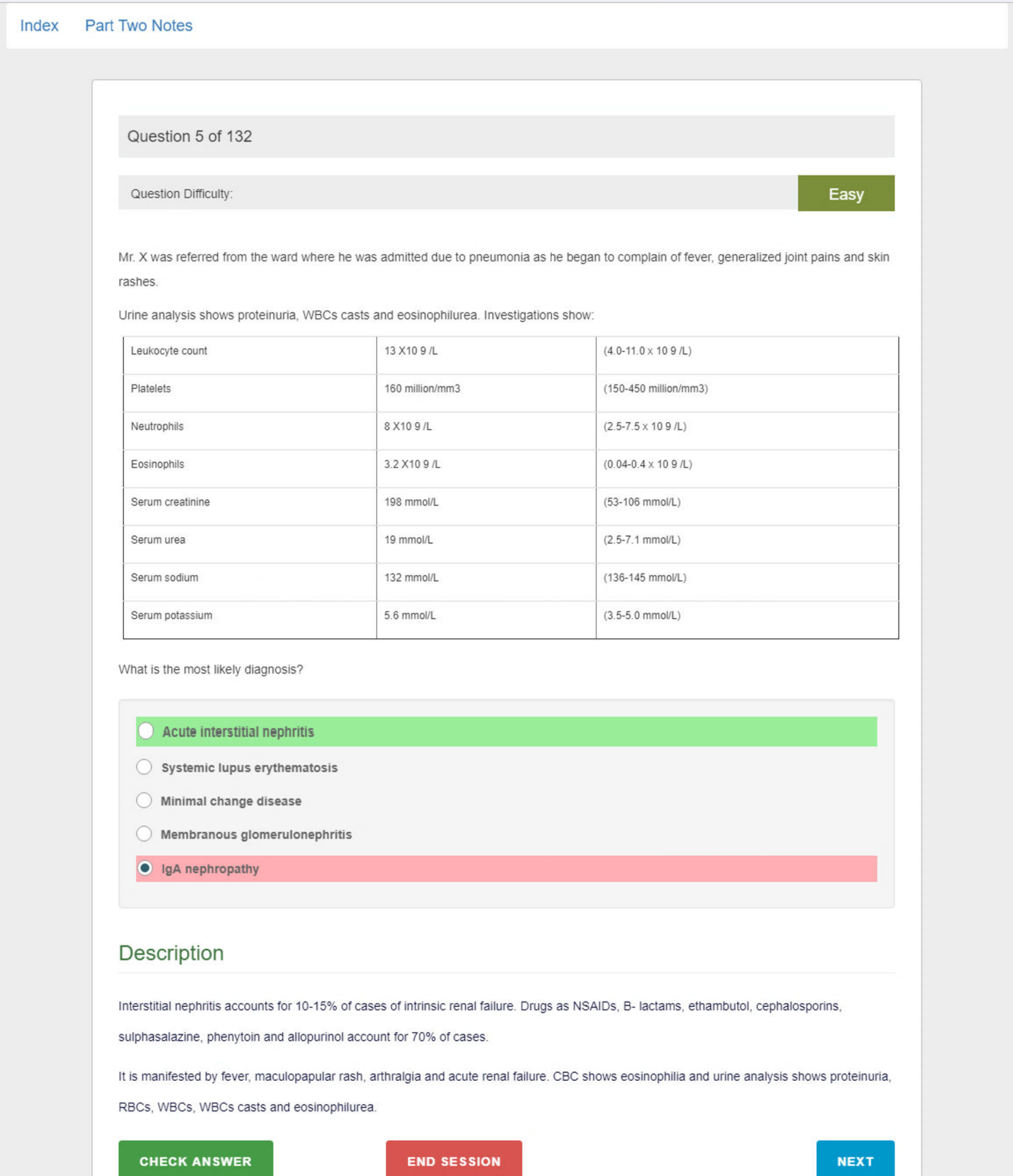
Description

Serum bicarbonate is elevated in compensation (chronic respiratory acidosis) and is normal to low in decompensation (acute respiratory acidosis).

Causes of acute respiratory acidosis

- Depression of the central respiratory center by cerebral disease or drugs
- Neuromuscular disease (e.g., myasthenia gravis, amyotrophic lateral sclerosis, Guillain-Barre syndrome, muscular dystrophy)
- Airway obstruction due to acute severe asthma or COPD exacerbation

Causes of chronic respiratory acidosis



Question 5 of 132

Question Difficulty: Easy

Mr. X was referred from the ward where he was admitted due to pneumonia as he began to complain of fever, generalized joint pains and skin rashes.

Urine analysis shows proteinuria, WBCs casts and eosinophilurea. Investigations show:

Leukocyte count	13 X10 9 /L	(4.0-11.0 x 10 9 /L)
Platelets	160 million/mm3	(150-450 million/mm3)
Neutrophils	8 X10 9 /L	(2.5-7.5 x 10 9 /L)
Eosinophils	3.2 X10 9 /L	(0.04-0.4 x 10 9 /L)
Serum creatinine	198 mmol/L	(53-106 mmol/L)
Serum urea	19 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	5.6 mmol/L	(3.5-5.0 mmol/L)

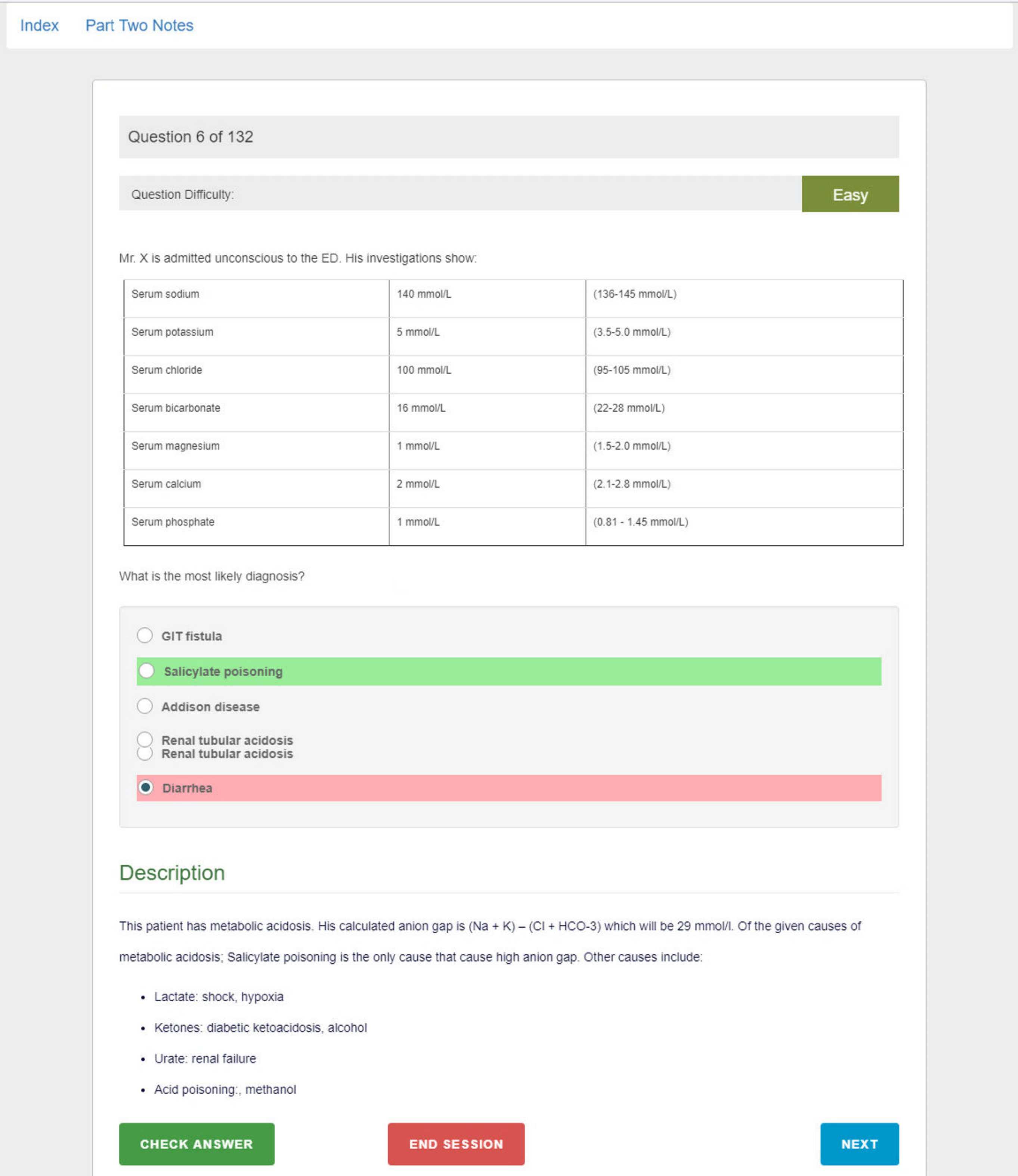
What is the most likely diagnosis?

- ○ **Acute interstitial nephritis**
- ○ **Systemic lupus erythematosis**
- ○ **Minimal change disease**
- ○ **Membranous glomerulonephritis**
- ● **IgA nephropathy**

Description

Interstitial nephritis accounts for 10-15% of cases of intrinsic renal failure. Drugs as NSAIDs, B- lactams, ethambutol, cephalosporins, sulphasalazine, phenytoin and allopurinol account for 70% of cases.

It is manifested by fever, maculopapular rash, arthralgia and acute renal failure. CBC shows eosinophilia and urine analysis shows proteinuria, RBCs, WBCs, WBCs casts and eosinophilurea.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Question 6 of 132
Question Difficulty:
Easy

Mr. X is admitted unconscious to the ED. His investigations show:

Serum sodium	140 mmol/L	(136-145 mmol/L)
Serum potassium	5 mmol/L	(3.5-5.0 mmol/L)
Serum chloride	100 mmol/L	(95-105 mmol/L)
Serum bicarbonate	16 mmol/L	(22-28 mmol/L)
Serum magnesium	1 mmol/L	(1.5-2.0 mmol/L)
Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
Serum phosphate	1 mmol/L	(0.81 - 1.45 mmol/L)

What is the most likely diagnosis?

○ **GIT fistula**

○ **Salicylate poisoning**

○ **Addison disease**

○ **Renal tubular acidosis**
○ **Renal tubular acidosis**

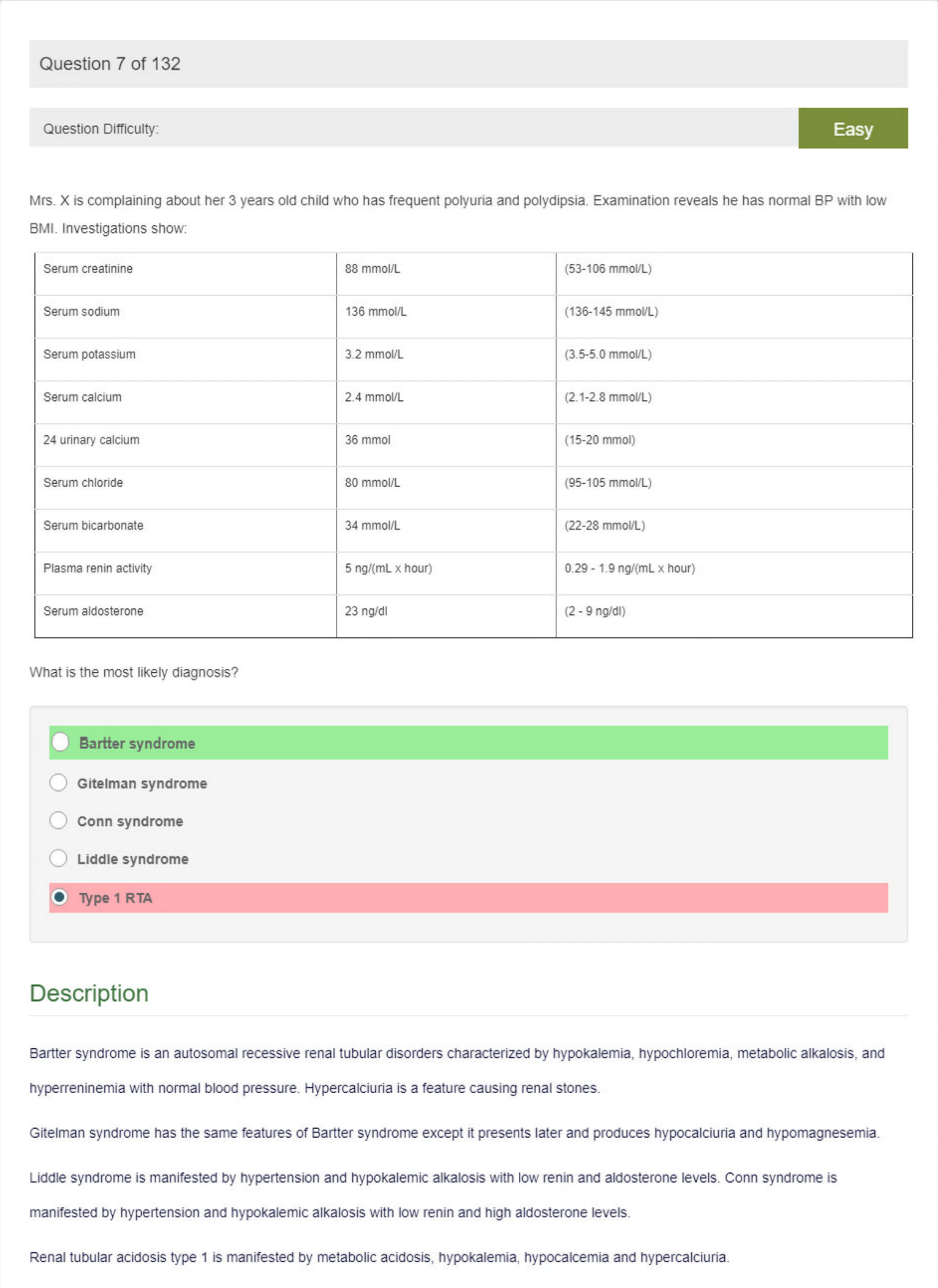
● **Diarrhea**

Description

This patient has metabolic acidosis. His calculated anion gap is (Na + K) – (Cl + HCO-3) which will be 29 mmol/l. Of the given causes of metabolic acidosis; Salicylate poisoning is the only cause that cause high anion gap. Other causes include:

- Lactate: shock, hypoxia
- Ketones: diabetic ketoacidosis, alcohol
- Urate: renal failure
- Acid poisoning:, methanol

CHECK ANSWER
END SESSION
NEXT



Question 7 of 132

Question Difficulty: **Easy**

Mrs. X is complaining about her 3 years old child who has frequent polyuria and polydipsia. Examination reveals he has normal BP with low BMI. Investigations show:

Serum creatinine	88 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	3.2 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.4 mmol/L	(2.1-2.8 mmol/L)
24 urinary calcium	36 mmol	(15-20 mmol)
Serum chloride	80 mmol/L	(95-105 mmol/L)
Serum bicarbonate	34 mmol/L	(22-28 mmol/L)
Plasma renin activity	5 ng/(mL x hour)	0.29 - 1.9 ng/(mL x hour)
Serum aldosterone	23 ng/dl	(2 - 9 ng/dl)

What is the most likely diagnosis?

- ○ **Bartter syndrome**
- ○ **Gitelman syndrome**
- ○ **Conn syndrome**
- ○ **Liddle syndrome**
- ● **Type 1 RTA**

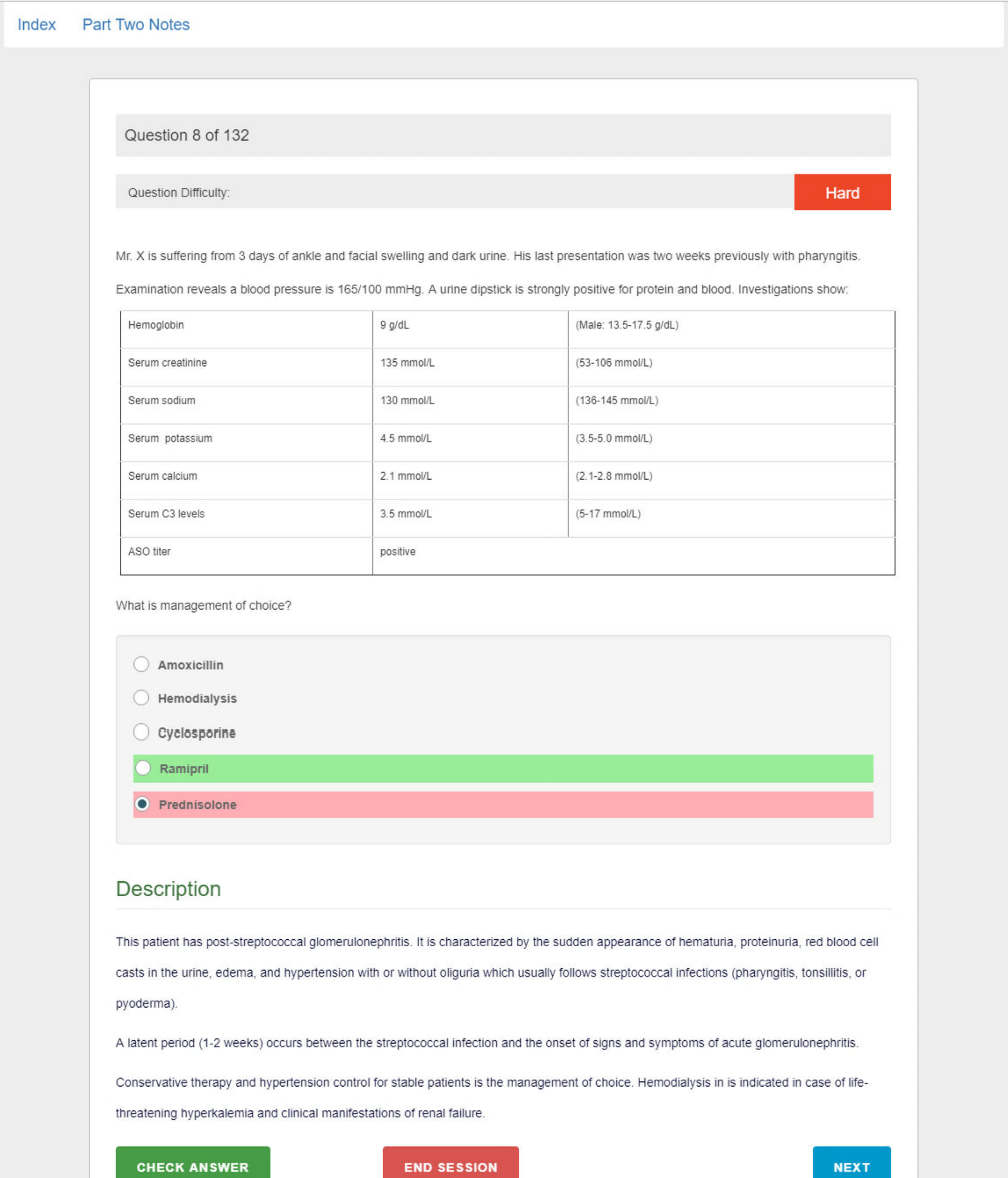
Description

Bartter syndrome is an autosomal recessive renal tubular disorders characterized by hypokalemia, hypochloremia, metabolic alkalosis, and hyperreninemia with normal blood pressure. Hypercalciuria is a feature causing renal stones.

Gitelman syndrome has the same features of Bartter syndrome except it presents later and produces hypocalciuria and hypomagnesemia.

Liddle syndrome is manifested by hypertension and hypokalemic alkalosis with low renin and aldosterone levels. Conn syndrome is manifested by hypertension and hypokalemic alkalosis with low renin and high aldosterone levels.

Renal tubular acidosis type 1 is manifested by metabolic acidosis, hypokalemia, hypocalcemia and hypercalciuria.



Question 8 of 132

Question Difficulty: **Hard**

Mr. X is suffering from 3 days of ankle and facial swelling and dark urine. His last presentation was two weeks previously with pharyngitis.

Examination reveals a blood pressure is 165/100 mmHg. A urine dipstick is strongly positive for protein and blood. Investigations show:

Hemoglobin	9 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	135 mmol/L	(53-106 mmol/L)
Serum sodium	130 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.1 mmol/L	(2.1-2.8 mmol/L)
Serum C3 levels	3.5 mmol/L	(5-17 mmol/L)
ASO titer	positive	

What is management of choice?

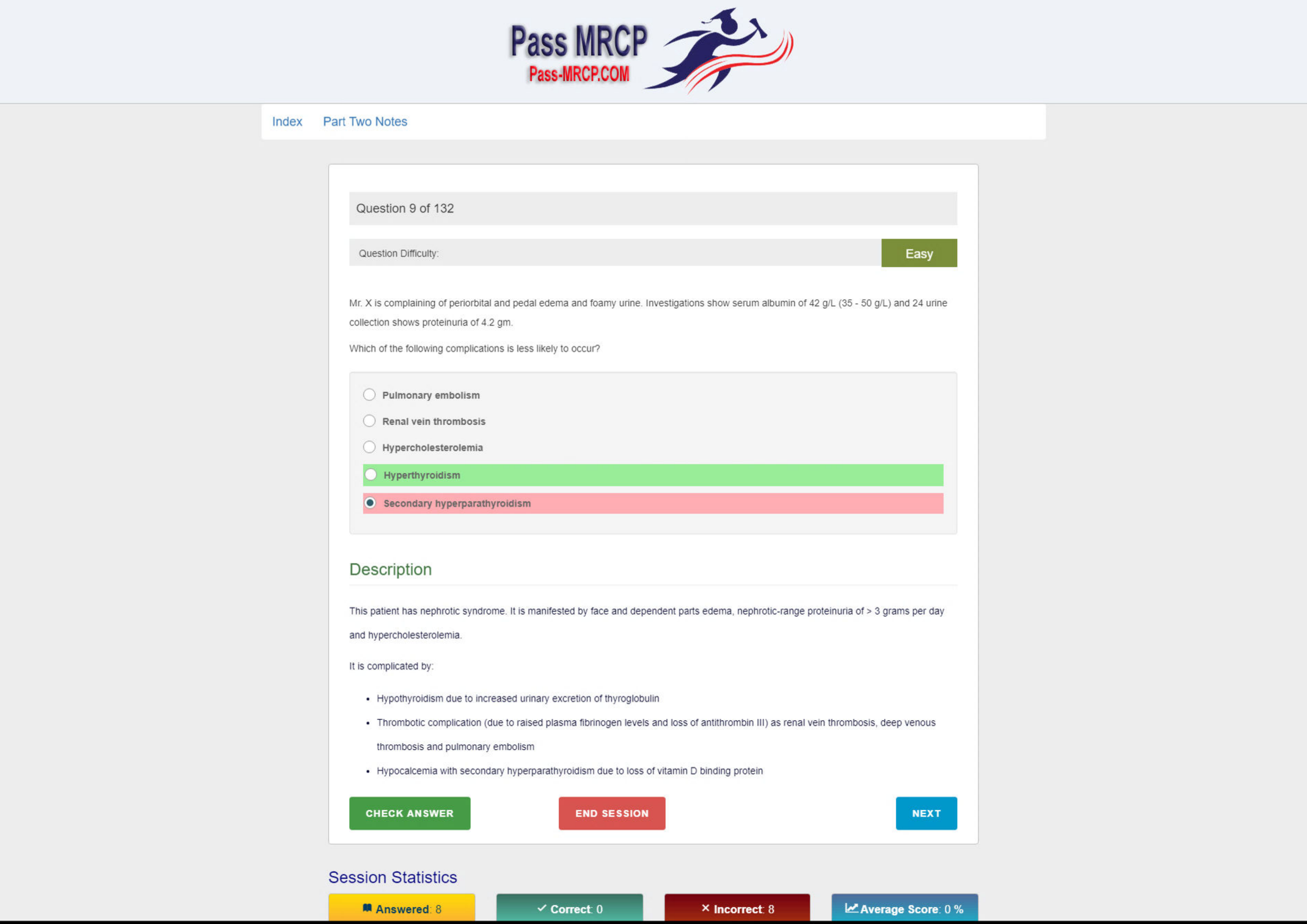
- ○ **Amoxicillin**
- ○ **Hemodialysis**
- ○ **Cyclosporine**
- ○ **Ramipril**
- ● **Prednisolone**

Description

This patient has post-streptococcal glomerulonephritis. It is characterized by the sudden appearance of hematuria, proteinuria, red blood cell casts in the urine, edema, and hypertension with or without oliguria which usually follows streptococcal infections (pharyngitis, tonsillitis, or pyoderma).

A latent period (1-2 weeks) occurs between the streptococcal infection and the onset of signs and symptoms of acute glomerulonephritis.

Conservative therapy and hypertension control for stable patients is the management of choice. Hemodialysis in is indicated in case of life-threatening hyperkalemia and clinical manifestations of renal failure.



Question 9 of 132

Question Difficulty: **Easy**

Mr. X is complaining of periorbital and pedal edema and foamy urine. Investigations show serum albumin of 42 g/L (35 - 50 g/L) and 24 urine collection shows proteinuria of 4.2 gm.

Which of the following complications is less likely to occur?

○ **Pulmonary embolism**

○ **Renal vein thrombosis**

○ **Hypercholesterolemia**

○ **Hyperthyroidism**

● **Secondary hyperparathyroidism**

Description

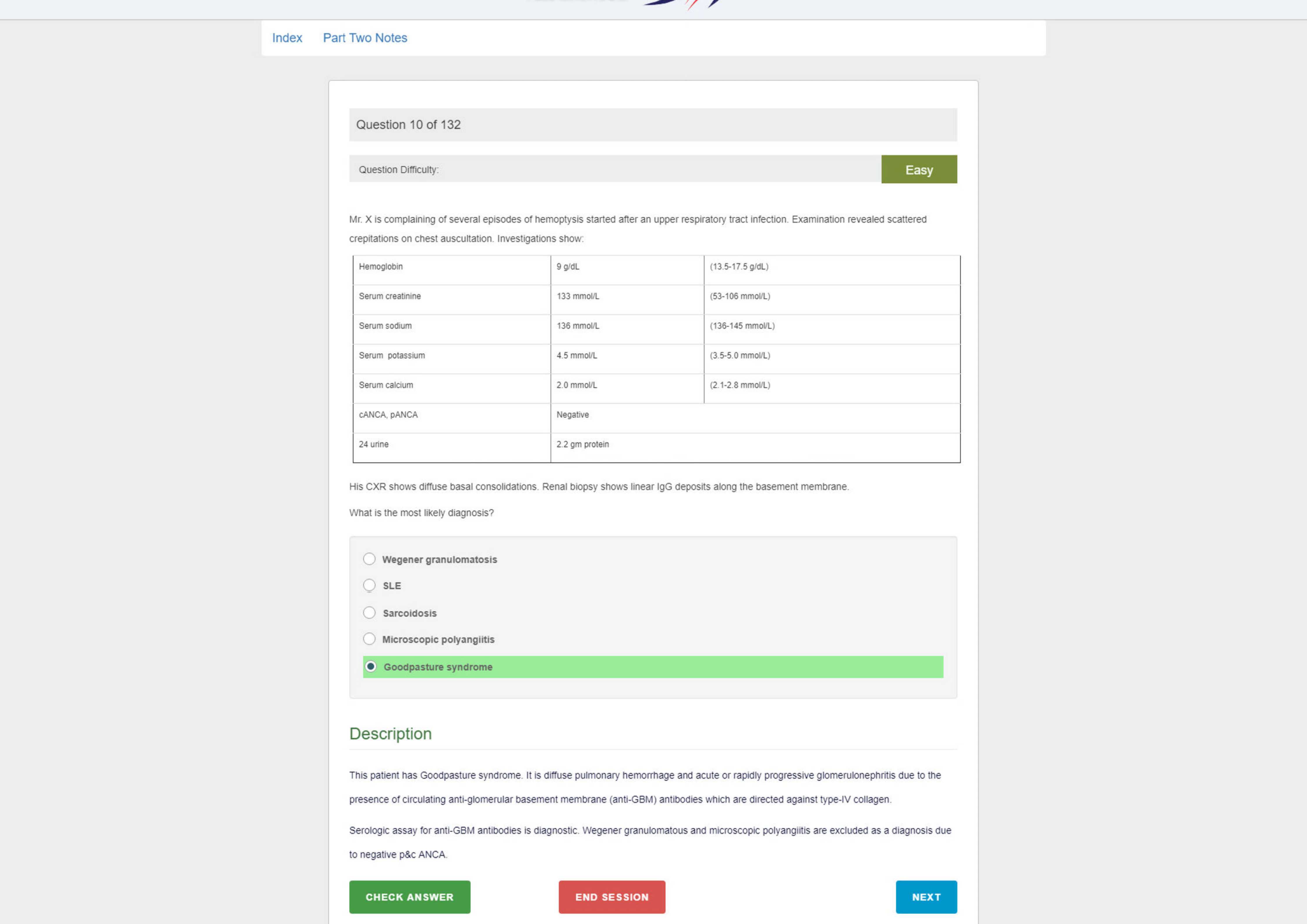
This patient has nephrotic syndrome. It is manifested by face and dependent parts edema, nephrotic-range proteinuria of > 3 grams per day and hypercholesterolemia.

It is complicated by:

- Hypothyroidism due to increased urinary excretion of thyroglobulin
- Thrombotic complication (due to raised plasma fibrinogen levels and loss of antithrombin III) as renal vein thrombosis, deep venous thrombosis and pulmonary embolism
- Hypocalcemia with secondary hyperparathyroidism due to loss of vitamin D binding protein

Session Statistics

Answered: 8
Correct: 0
Incorrect: 8
Average Score: 0 %



Question 10 of 132

Question Difficulty: Easy

Mr. X is complaining of several episodes of hemoptysis started after an upper respiratory tract infection. Examination revealed scattered crepitations on chest auscultation. Investigations show:

Hemoglobin	9 g/dL	(13.5-17.5 g/dL)
Serum creatinine	133 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.0 mmol/L	(2.1-2.8 mmol/L)
cANCA, pANCA	Negative	
24 urine	2.2 gm protein	

His CXR shows diffuse basal consolidations. Renal biopsy shows linear IgG deposits along the basement membrane.

What is the most likely diagnosis?

- ○ **Wegener granulomatosis**
- ○ **SLE**
- ○ **Sarcoidosis**
- ○ **Microscopic polyangiitis**
- ● **Goodpasture syndrome**

Description

This patient has Goodpasture syndrome. It is diffuse pulmonary hemorrhage and acute or rapidly progressive glomerulonephritis due to the presence of circulating anti-glomerular basement membrane (anti-GBM) antibodies which are directed against type-IV collagen.

Serologic assay for anti-GBM antibodies is diagnostic. Wegener granulomatous and microscopic polyangiitis are excluded as a diagnosis due to negative p&c ANCA.

Question 11 of 132

Question Difficulty: **Easy**

30 years Mr. X is suffering from increasing swelling of his ankles. He has no past medical history. Examination shows he has gross pitting edema of legs, ascites and facial and hand.

CXR shows bilateral pleural effusions. Investigations show:

Hemoglobin	11 g/dL	(13.5-17.5 g/dL)
Serum creatinine	140 mmol/L	(53-106 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	7.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	33 g/L	(35 - 50 g/L)
24 urine	4.2 gm protein	

Renal biopsy was ordered and shows retraction of the epithelial foot processes.

What is the most likely diagnosis?

Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	7.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	33 g/L	(35 - 50 g/L)
24 urine	4.2 gm protein	

Renal biopsy was ordered and shows retraction of the epithelial foot processes.

What is the most likely diagnosis?

○ **Post-infectious glomerulonephritis**

○ **Goodpasture syndrome**

○ **Membranous glomerulonephritis**

○ **IgA nephropathy**

● **Minimal change disease**

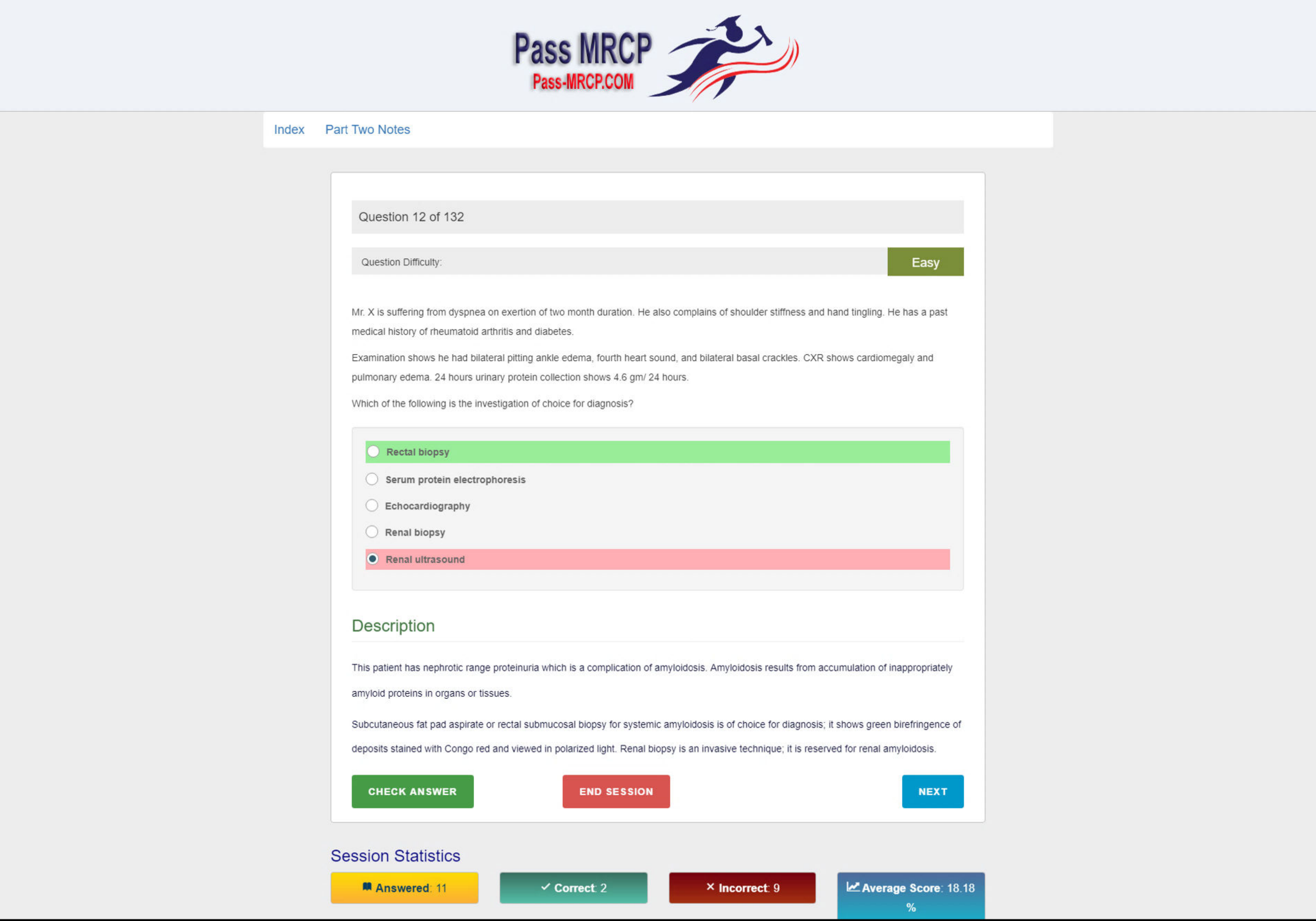
Description

This patient has nephrotic syndrome caused by minimal-change disease (MCD). It is the most common single form of nephrotic syndrome in children, but it also can occur in adults. Light microscopy is normal in biopsy. Electron microscopy shows retraction of the epithelial foot processes.

CHECK ANSWER END SESSION NEXT

Session Statistics

Answered: 10 ✓ **Correct**: 1 × **Incorrect**: 9 **Average Score**: 10 %



Question 12 of 132

Question Difficulty: Easy

Mr. X is suffering from dyspnea on exertion of two month duration. He also complains of shoulder stiffness and hand tingling. He has a past medical history of rheumatoid arthritis and diabetes.

Examination shows he had bilateral pitting ankle edema, fourth heart sound, and bilateral basal crackles. CXR shows cardiomegaly and pulmonary edema. 24 hours urinary protein collection shows 4.6 gm/ 24 hours.

Which of the following is the investigation of choice for diagnosis?

- ○ Rectal biopsy
- ○ Serum protein electrophoresis
- ○ Echocardiography
- ○ Renal biopsy
- ● Renal ultrasound

Description

This patient has nephrotic range proteinuria which is a complication of amyloidosis. Amyloidosis results from accumulation of inappropriately amyloid proteins in organs or tissues.

Subcutaneous fat pad aspirate or rectal submucosal biopsy for systemic amyloidosis is of choice for diagnosis; it shows green birefringence of deposits stained with Congo red and viewed in polarized light. Renal biopsy is an invasive technique; it is reserved for renal amyloidosis.

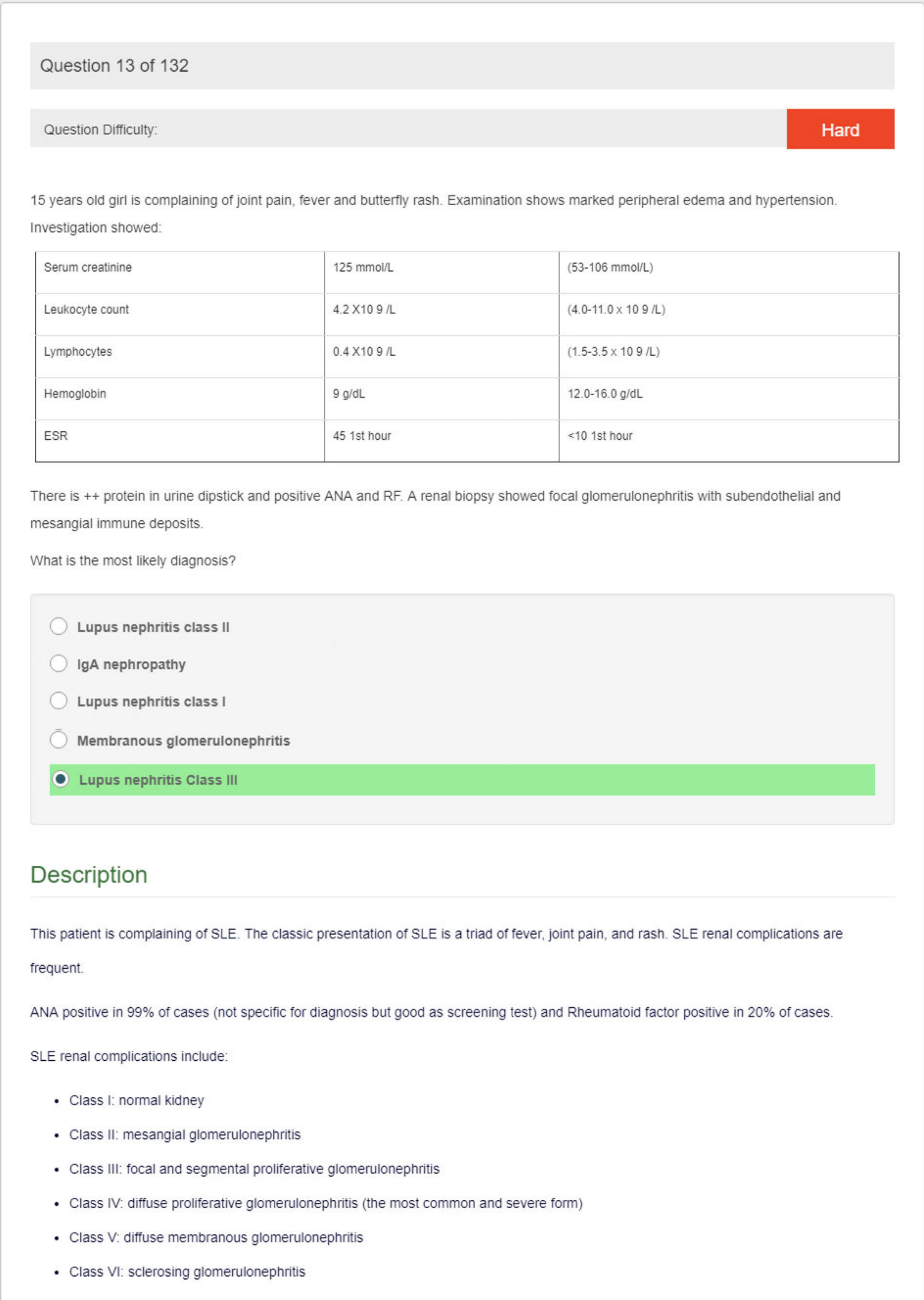
Session Statistics

Answered: 11

Correct: 2

Incorrect: 9

Average Score: 18.18 %



Question 13 of 132

Question Difficulty: **Hard**

15 years old girl is complaining of joint pain, fever and butterfly rash. Examination shows marked peripheral edema and hypertension. Investigation showed:

Serum creatinine	125 mmol/L	(53-106 mmol/L)
Leukocyte count	4.2 X10 9 /L	(4.0-11.0 x 10 9 /L)
Lymphocytes	0.4 X10 9 /L	(1.5-3.5 x 10 9 /L)
Hemoglobin	9 g/dL	12.0-16.0 g/dL
ESR	45 1st hour	<10 1st hour

There is ++ protein in urine dipstick and positive ANA and RF. A renal biopsy showed focal glomerulonephritis with subendothelial and mesangial immune deposits.

What is the most likely diagnosis?

○ **Lupus nephritis class II**

○ **IgA nephropathy**

○ **Lupus nephritis class I**

○ **Membranous glomerulonephritis**

● **Lupus nephritis Class III**

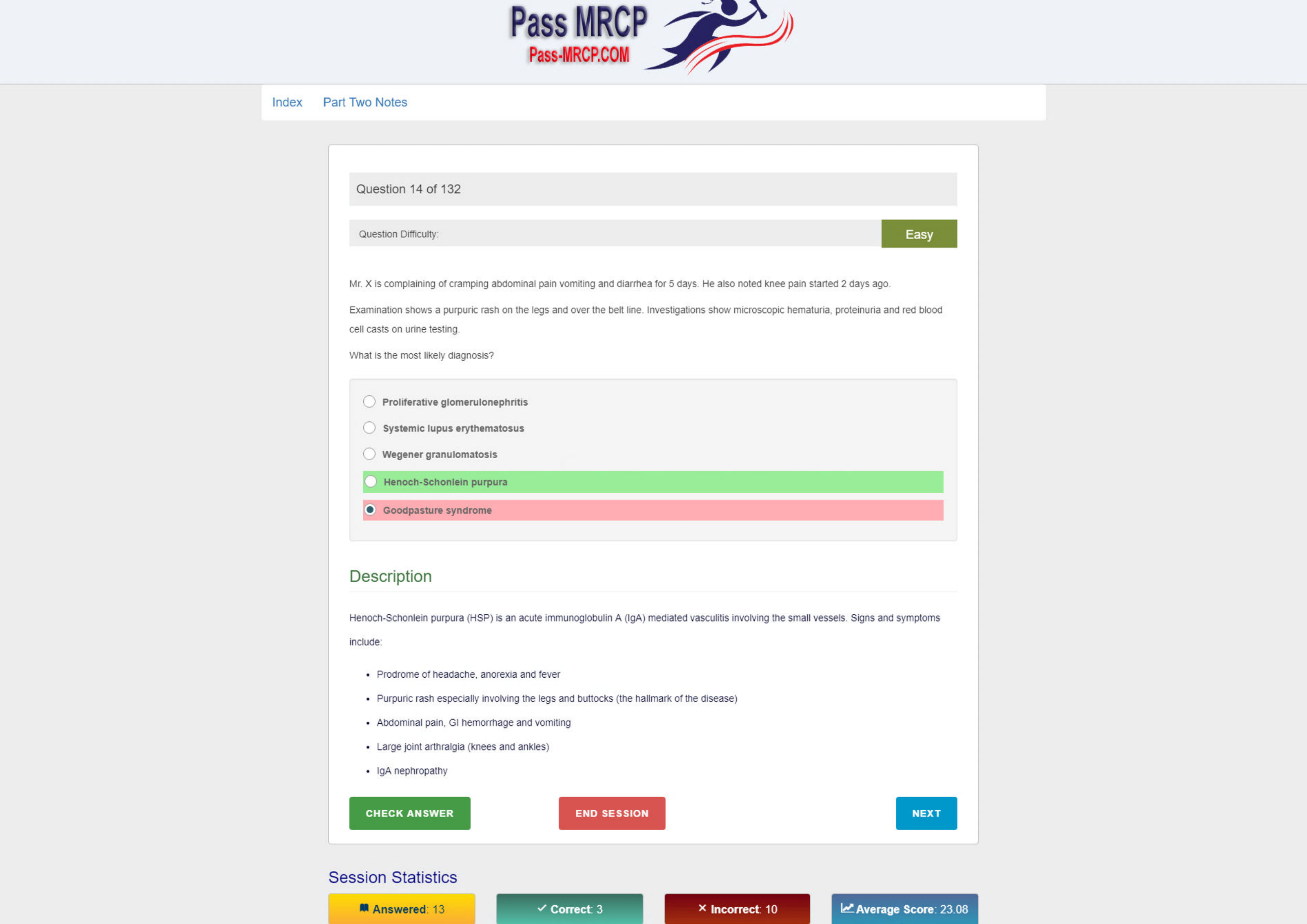
Description

This patient is complaining of SLE. The classic presentation of SLE is a triad of fever, joint pain, and rash. SLE renal complications are frequent.

ANA positive in 99% of cases (not specific for diagnosis but good as screening test) and Rheumatoid factor positive in 20% of cases.

SLE renal complications include:

- Class I: normal kidney
- Class II: mesangial glomerulonephritis
- Class III: focal and segmental proliferative glomerulonephritis
- Class IV: diffuse proliferative glomerulonephritis (the most common and severe form)
- Class V: diffuse membranous glomerulonephritis
- Class VI: sclerosing glomerulonephritis



Question 14 of 132

Question Difficulty: Easy

Mr. X is complaining of cramping abdominal pain vomiting and diarrhea for 5 days. He also noted knee pain started 2 days ago.

Examination shows a purpuric rash on the legs and over the belt line. Investigations show microscopic hematuria, proteinuria and red blood cell casts on urine testing.

What is the most likely diagnosis?

○ **Proliferative glomerulonephritis**
○ **Systemic lupus erythematosus**
○ **Wegener granulomatosis**
○ **Henoch-Schonlein purpura**
● **Goodpasture syndrome**

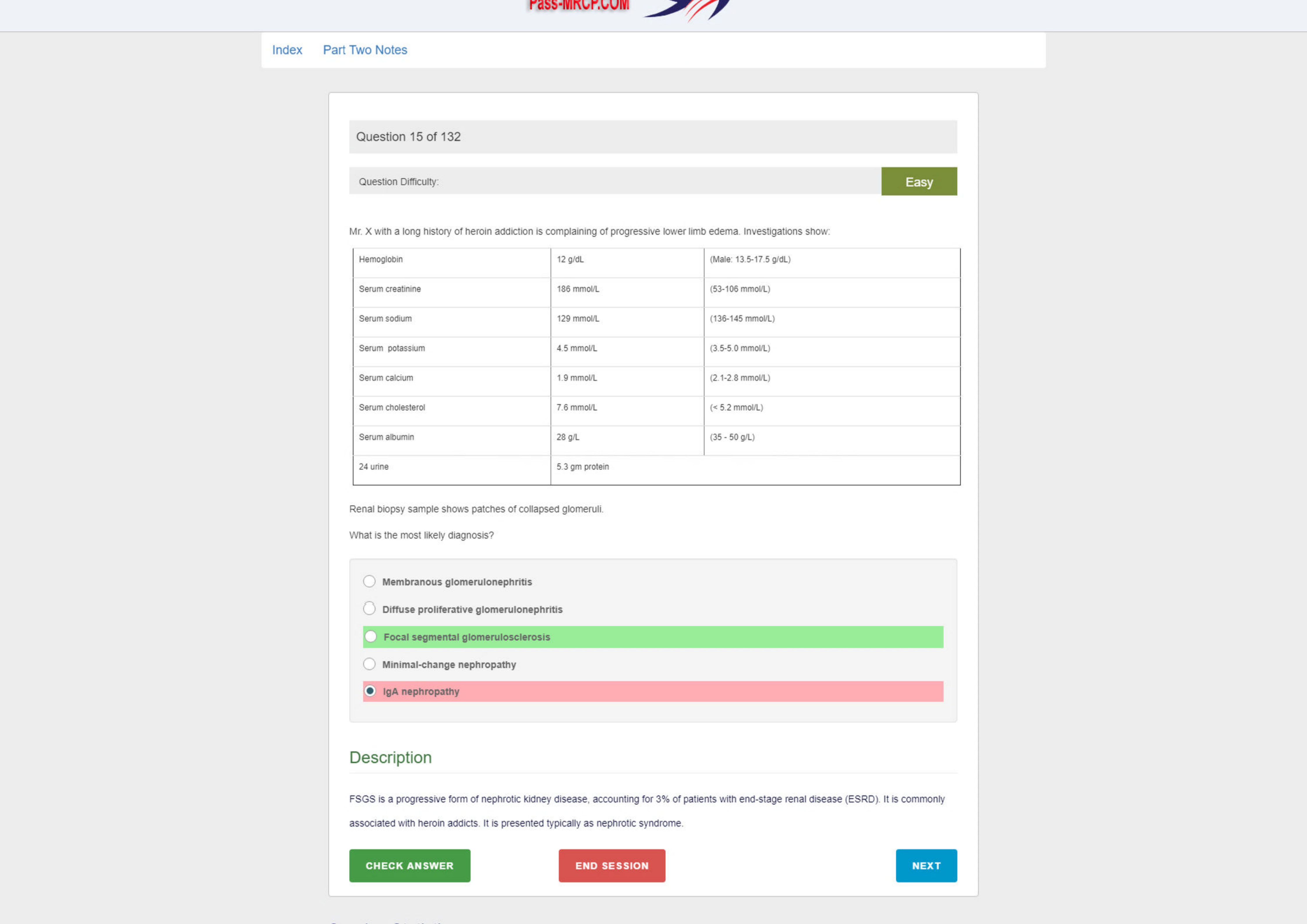
Description

Henoch-Schonlein purpura (HSP) is an acute immunoglobulin A (IgA) mediated vasculitis involving the small vessels. Signs and symptoms include:

- Prodrome of headache, anorexia and fever
- Purpuric rash especially involving the legs and buttocks (the hallmark of the disease)
- Abdominal pain, GI hemorrhage and vomiting
- Large joint arthralgia (knees and ankles)
- IgA nephropathy

Session Statistics

Answered: 13
✓ Correct: 3
✕ Incorrect: 10
Average Score: 23.08



Question 15 of 132

Question Difficulty: Easy

Mr. X with a long history of heroin addiction is complaining of progressive lower limb edema. Investigations show:

Hemoglobin	12 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	186 mmol/L	(53-106 mmol/L)
Serum sodium	129 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.9 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	7.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	28 g/L	(35 - 50 g/L)
24 urine	5.3 gm protein	

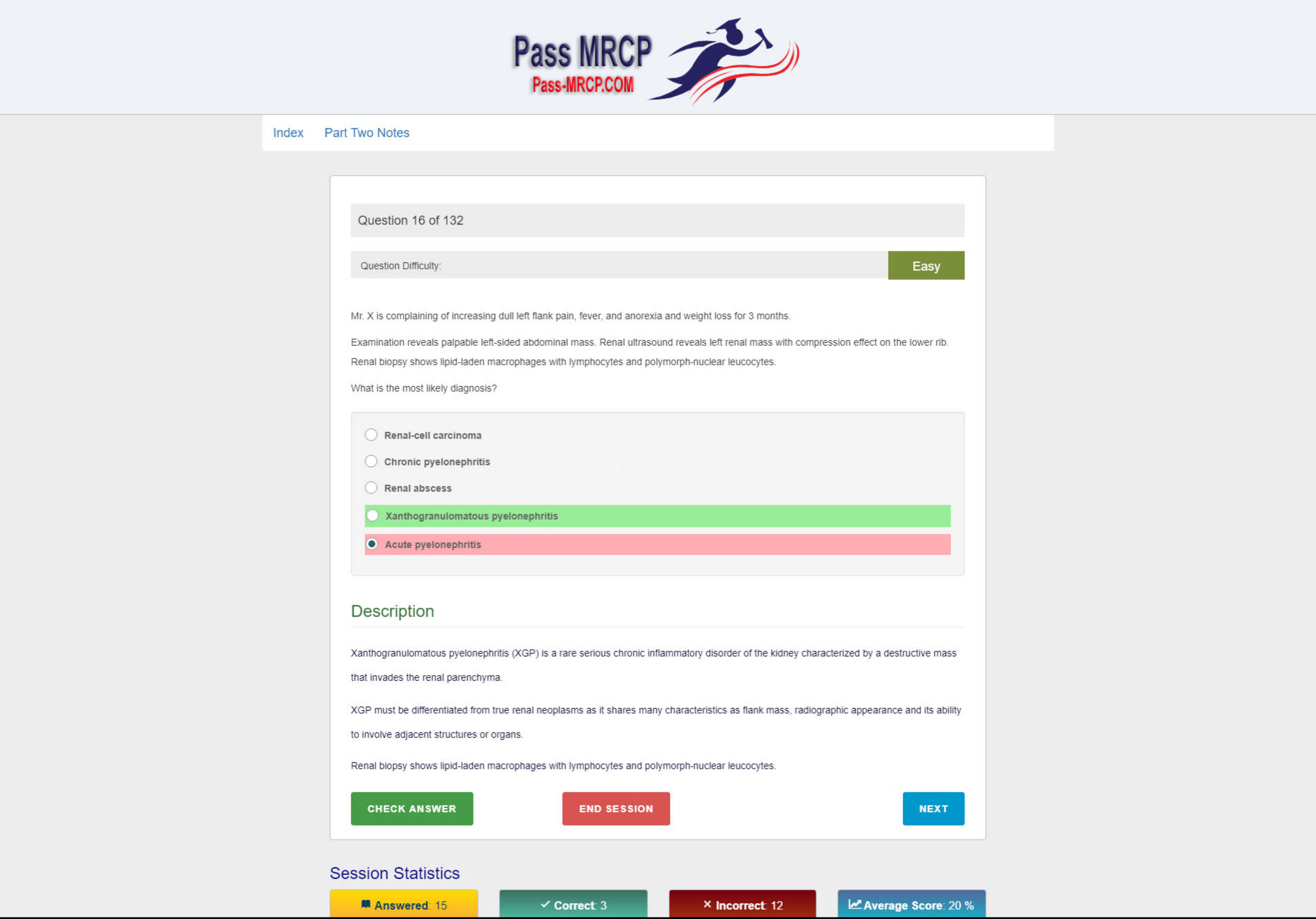
Renal biopsy sample shows patches of collapsed glomeruli.

What is the most likely diagnosis?

○ **Membranous glomerulonephritis**
○ **Diffuse proliferative glomerulonephritis**
○ **Focal segmental glomerulosclerosis**
○ **Minimal-change nephropathy**
● **IgA nephropathy**

Description

FSGS is a progressive form of nephrotic kidney disease, accounting for 3% of patients with end-stage renal disease (ESRD). It is commonly associated with heroin addicts. It is presented typically as nephrotic syndrome.



Pass MRCP
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Index Part Two Notes

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Question Difficulty: **Easy**

Mr. X is complaining of increasing dull left flank pain, fever, and anorexia and weight loss for 3 months.

Examination reveals palpable left-sided abdominal mass. Renal ultrasound reveals left renal mass with compression effect on the lower rib. Renal biopsy shows lipid-laden macrophages with lymphocytes and polymorph-nuclear leucocytes.

What is the most likely diagnosis?

○ **Renal-cell carcinoma**
○ **Chronic pyelonephritis**
○ **Renal abscess**
○ **Xanthogranulomatous pyelonephritis**
● **Acute pyelonephritis**

Description

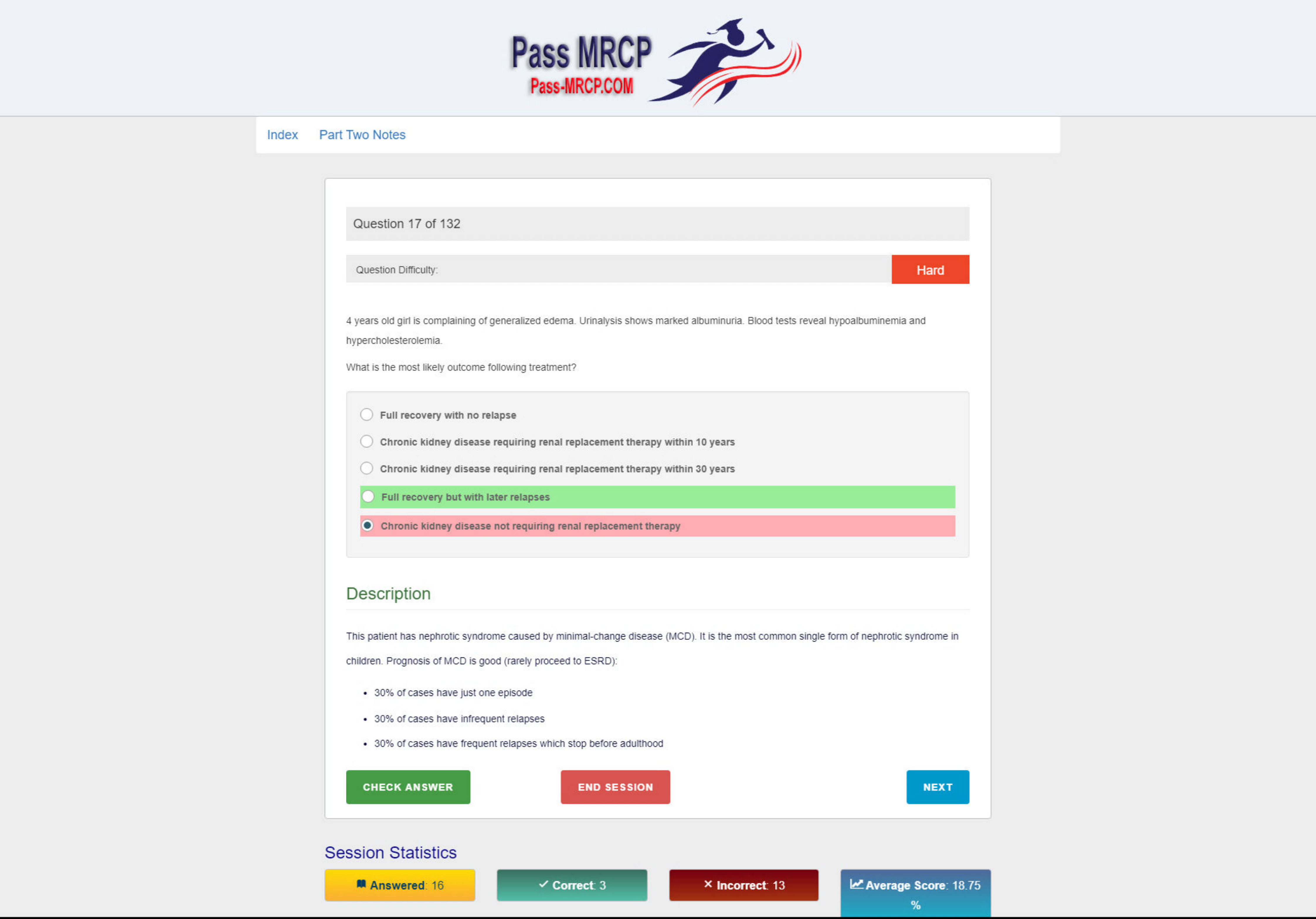
Xanthogranulomatous pyelonephritis (XGP) is a rare serious chronic inflammatory disorder of the kidney characterized by a destructive mass that invades the renal parenchyma.

XGP must be differentiated from true renal neoplasms as it shares many characteristics as flank mass, radiographic appearance and its ability to involve adjacent structures or organs.

Renal biopsy shows lipid-laden macrophages with lymphocytes and polymorph-nuclear leucocytes.

Session Statistics

Answered: 15 ✓ **Correct**: 3 × **Incorrect**: 12 **Average Score**: 20 %



Question 17 of 132

Question Difficulty: **Hard**

4 years old girl is complaining of generalized edema. Urinalysis shows marked albuminuria. Blood tests reveal hypoalbuminemia and hypercholesterolemia.

What is the most likely outcome following treatment?

○ **Full recovery with no relapse**
○ **Chronic kidney disease requiring renal replacement therapy within 10 years**
○ **Chronic kidney disease requiring renal replacement therapy within 30 years**
○ **Full recovery but with later relapses**
● **Chronic kidney disease not requiring renal replacement therapy**

Description

This patient has nephrotic syndrome caused by minimal-change disease (MCD). It is the most common single form of nephrotic syndrome in children. Prognosis of MCD is good (rarely proceed to ESRD):

- 30% of cases have just one episode
- 30% of cases have infrequent relapses
- 30% of cases have frequent relapses which stop before adulthood

Session Statistics

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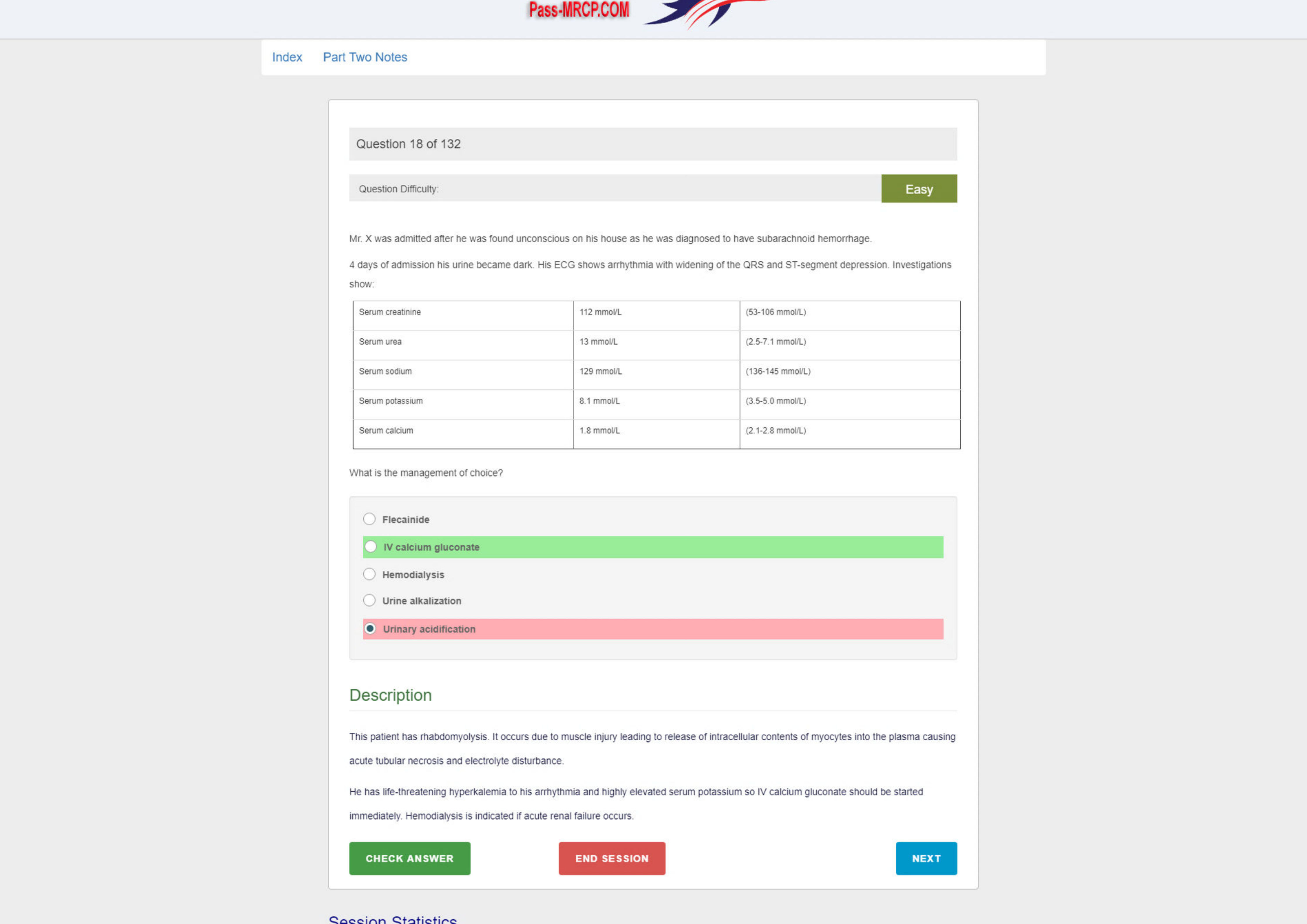
Average Score: 18.75 %



Question 18 of 132

Question Difficulty: Easy

Mr. X was admitted after he was found unconscious on his house as he was diagnosed to have subarachnoid hemorrhage.

4 days of admission his urine became dark. His ECG shows arrhythmia with widening of the QRS and ST-segment depression. Investigations show:

Serum creatinine	112 mmol/L	(53-106 mmol/L)
Serum urea	13 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	129 mmol/L	(136-145 mmol/L)
Serum potassium	8.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.8 mmol/L	(2.1-2.8 mmol/L)

What is the management of choice?

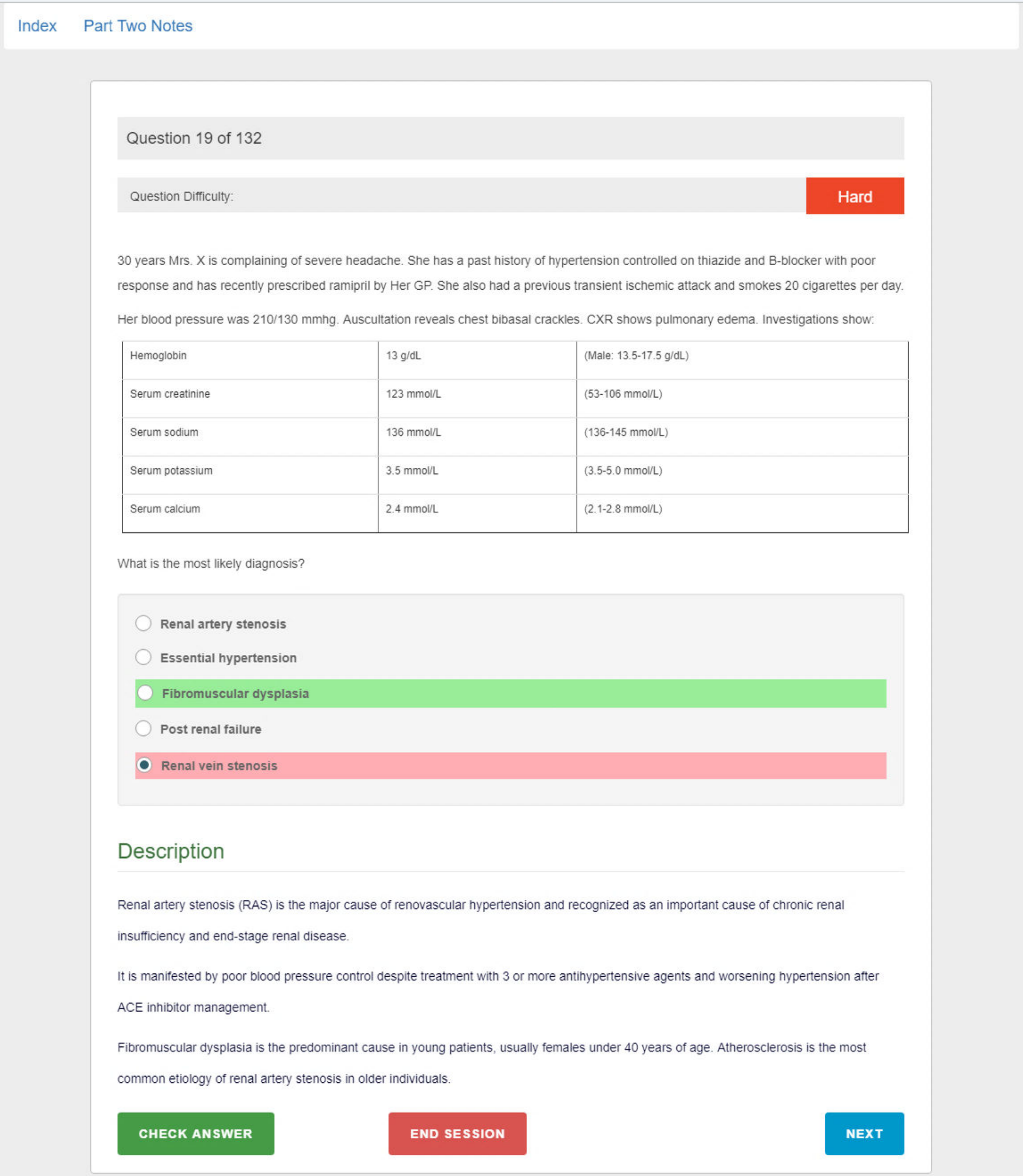
- ○ **Flecainide**
- ○ **IV calcium gluconate**
- ○ **Hemodialysis**
- ○ **Urine alkalization**
- ● **Urinary acidification**

Description

This patient has rhabdomyolysis. It occurs due to muscle injury leading to release of intracellular contents of myocytes into the plasma causing acute tubular necrosis and electrolyte disturbance.

He has life-threatening hyperkalemia to his arrhythmia and highly elevated serum potassium so IV calcium gluconate should be started immediately. Hemodialysis is indicated if acute renal failure occurs.

Session Statistics



Question 19 of 132

Question Difficulty: **Hard**

30 years Mrs. X is complaining of severe headache. She has a past history of hypertension controlled on thiazide and B-blocker with poor response and has recently prescribed ramipril by Her GP. She also had a previous transient ischemic attack and smokes 20 cigarettes per day.

Her blood pressure was 210/130 mmhg. Auscultation reveals chest bibasal crackles. CXR shows pulmonary edema. Investigations show:

Hemoglobin	13 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	123 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	3.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.4 mmol/L	(2.1-2.8 mmol/L)

What is the most likely diagnosis?

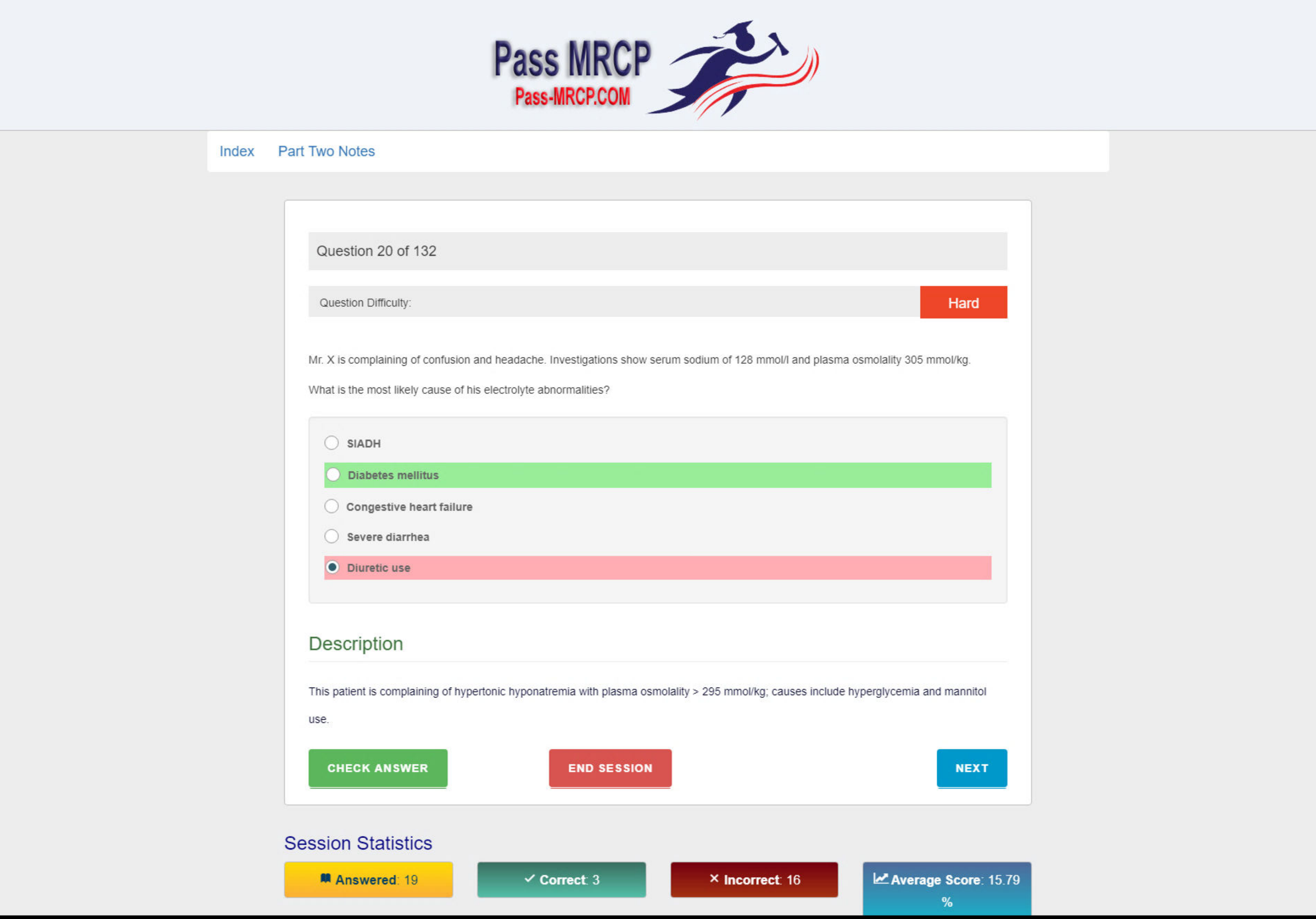
- ○ **Renal artery stenosis**
- ○ **Essential hypertension**
- ○ **Fibromuscular dysplasia**
- ○ **Post renal failure**
- ● **Renal vein stenosis**

Description

Renal artery stenosis (RAS) is the major cause of renovascular hypertension and recognized as an important cause of chronic renal insufficiency and end-stage renal disease.

It is manifested by poor blood pressure control despite treatment with 3 or more antihypertensive agents and worsening hypertension after ACE inhibitor management.

Fibromuscular dysplasia is the predominant cause in young patients, usually females under 40 years of age. Atherosclerosis is the most common etiology of renal artery stenosis in older individuals.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Question Difficulty: Hard

Mr. X is complaining of confusion and headache. Investigations show serum sodium of 128 mmol/l and plasma osmolality 305 mmol/kg.

What is the most likely cause of his electrolyte abnormalities?

- ○ SIADH
- ○ Diabetes mellitus
- ○ Congestive heart failure
- ○ Severe diarrhea
- ● Diuretic use

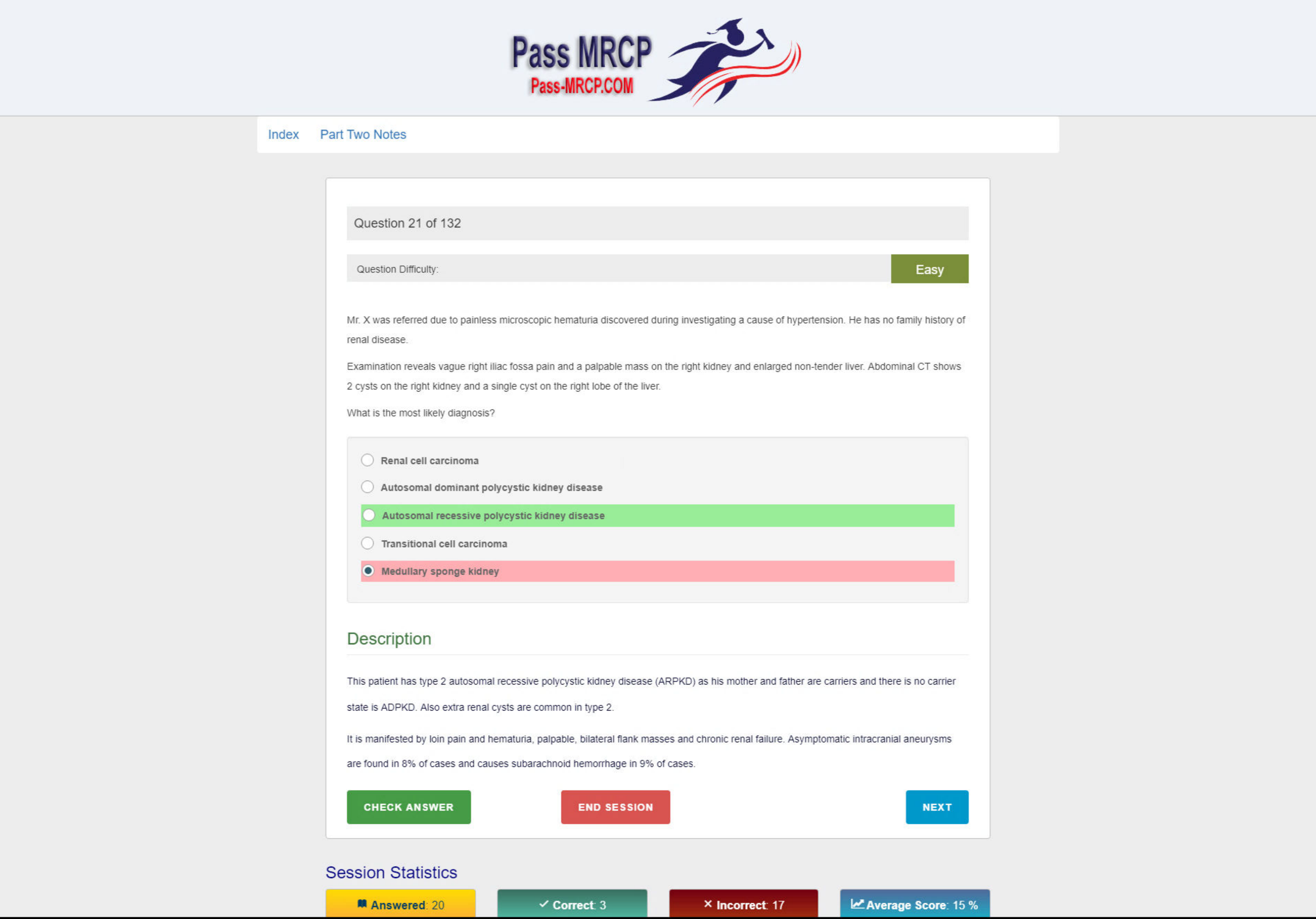
Description

This patient is complaining of hypertonic hyponatremia with plasma osmolality > 295 mmol/kg; causes include hyperglycemia and mannitol use.

CHECK ANSWER
END SESSION
NEXT

Session Statistics

Answered: 19
✓ Correct: 3
× Incorrect: 16
Average Score: 15.79 %



Question 21 of 132

Question Difficulty: **Easy**

Mr. X was referred due to painless microscopic hematuria discovered during investigating a cause of hypertension. He has no family history of renal disease.

Examination reveals vague right iliac fossa pain and a palpable mass on the right kidney and enlarged non-tender liver. Abdominal CT shows 2 cysts on the right kidney and a single cyst on the right lobe of the liver.

What is the most likely diagnosis?

- ○ **Renal cell carcinoma**
- ○ **Autosomal dominant polycystic kidney disease**
- ○ **Autosomal recessive polycystic kidney disease**
- ○ **Transitional cell carcinoma**
- ● **Medullary sponge kidney**

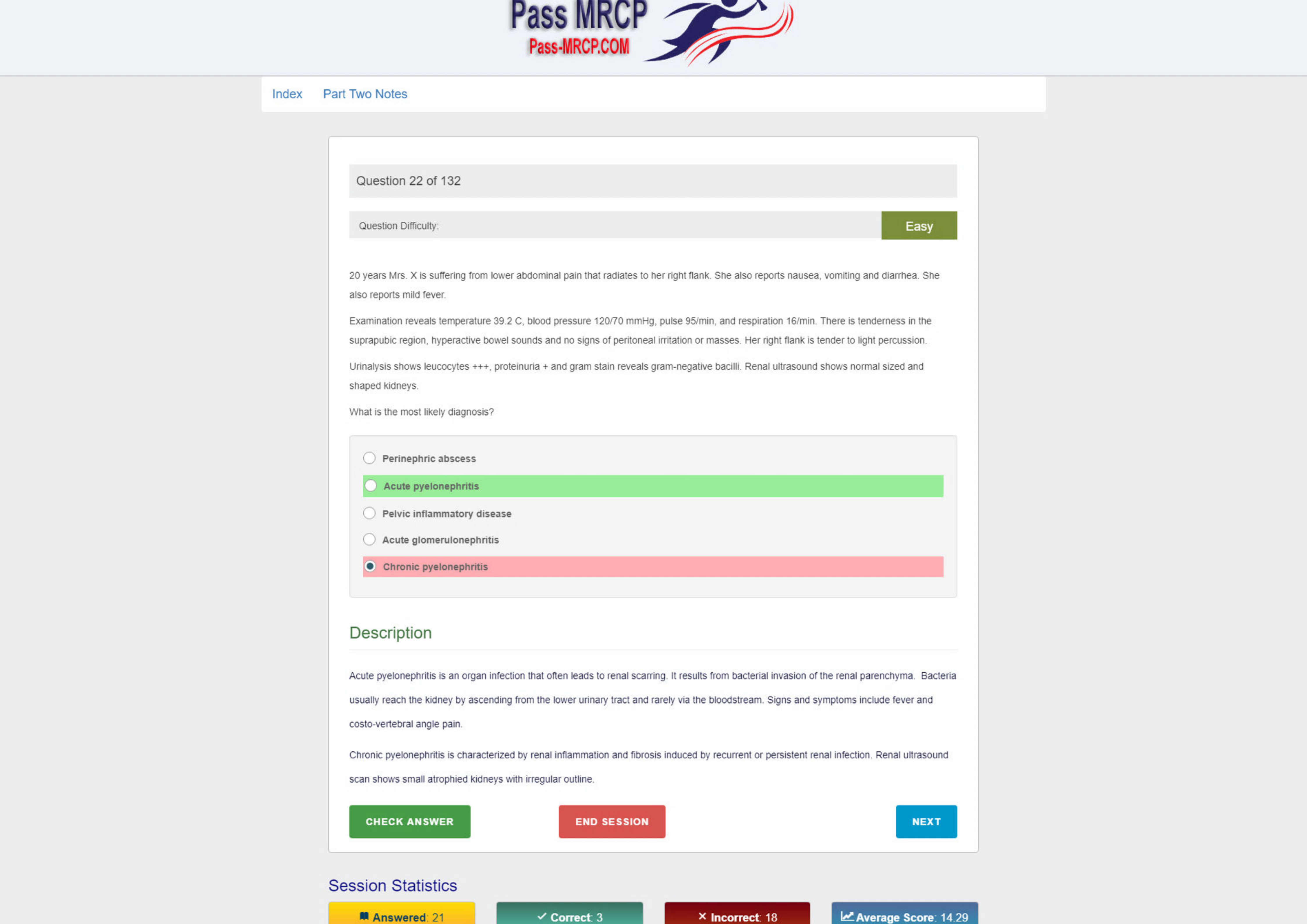
Description

This patient has type 2 autosomal recessive polycystic kidney disease (ARPKD) as his mother and father are carriers and there is no carrier state is ADPKD. Also extra renal cysts are common in type 2.

It is manifested by loin pain and hematuria, palpable, bilateral flank masses and chronic renal failure. Asymptomatic intracranial aneurysms are found in 8% of cases and causes subarachnoid hemorrhage in 9% of cases.

Session Statistics

Answered: 20
✓ **Correct**: 3
✕ **Incorrect**: 17
Average Score: 15 %



Question 22 of 132

Question Difficulty: Easy

20 years Mrs. X is suffering from lower abdominal pain that radiates to her right flank. She also reports nausea, vomiting and diarrhea. She also reports mild fever.

Examination reveals temperature 39.2 C, blood pressure 120/70 mmHg, pulse 95/min, and respiration 16/min. There is tenderness in the suprapubic region, hyperactive bowel sounds and no signs of peritoneal irritation or masses. Her right flank is tender to light percussion.

Urinalysis shows leucocytes +++, proteinuria + and gram stain reveals gram-negative bacilli. Renal ultrasound shows normal sized and shaped kidneys.

What is the most likely diagnosis?

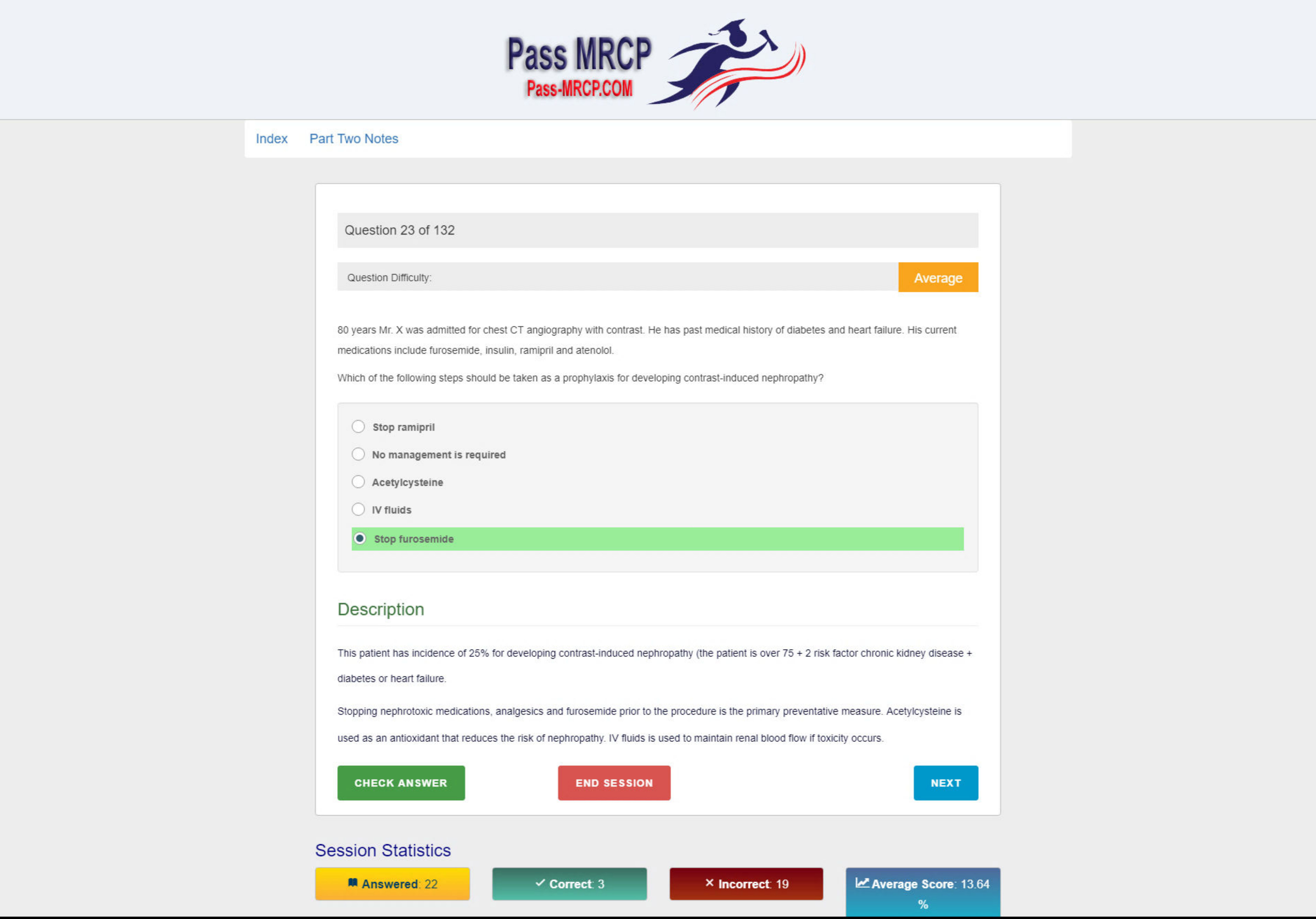
- ○ **Perinephric abscess**
- ○ **Acute pyelonephritis**
- ○ **Pelvic inflammatory disease**
- ○ **Acute glomerulonephritis**
- ● **Chronic pyelonephritis**

Description

Acute pyelonephritis is an organ infection that often leads to renal scarring. It results from bacterial invasion of the renal parenchyma. Bacteria usually reach the kidney by ascending from the lower urinary tract and rarely via the bloodstream. Signs and symptoms include fever and costo-vertebral angle pain.

Chronic pyelonephritis is characterized by renal inflammation and fibrosis induced by recurrent or persistent renal infection. Renal ultrasound scan shows small atrophied kidneys with irregular outline.

Session Statistics



Question 23 of 132

Question Difficulty: Average

80 years Mr. X was admitted for chest CT angiography with contrast. He has past medical history of diabetes and heart failure. His current medications include furosemide, insulin, ramipril and atenolol.

Which of the following steps should be taken as a prophylaxis for developing contrast-induced nephropathy?

- ○ **Stop ramipril**
- ○ **No management is required**
- ○ **Acetylcysteine**
- ○ **IV fluids**
- ● **Stop furosemide**

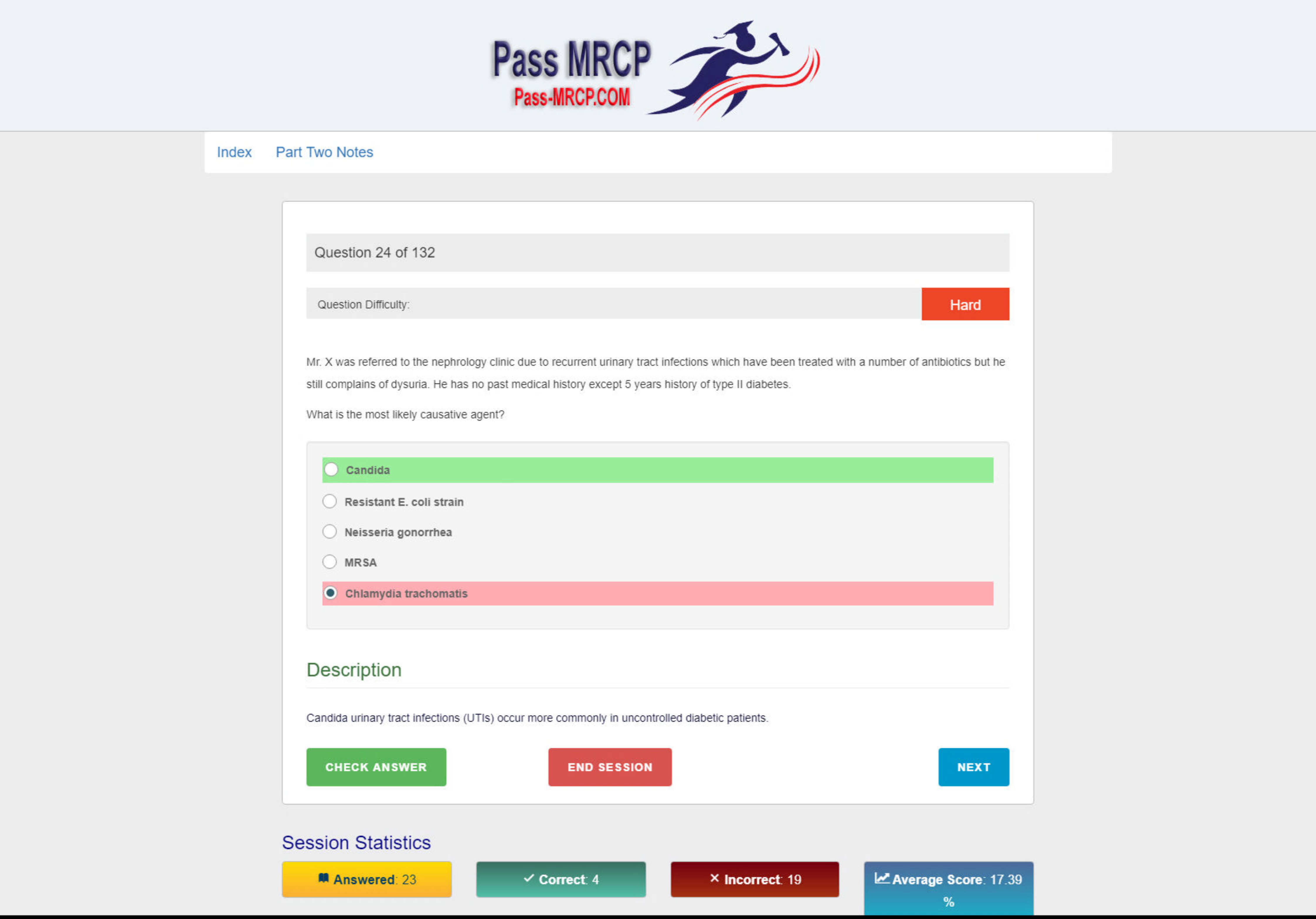
Description

This patient has incidence of 25% for developing contrast-induced nephropathy (the patient is over 75 + 2 risk factor chronic kidney disease + diabetes or heart failure.

Stopping nephrotoxic medications, analgesics and furosemide prior to the procedure is the primary preventative measure. Acetylcysteine is used as an antioxidant that reduces the risk of nephropathy. IV fluids is used to maintain renal blood flow if toxicity occurs.

Session Statistics

Answered: 22
Correct: 3
Incorrect: 19
Average Score: 13.64 %



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Question Difficulty: **Hard**

Mr. X was referred to the nephrology clinic due to recurrent urinary tract infections which have been treated with a number of antibiotics but he still complains of dysuria. He has no past medical history except 5 years history of type II diabetes.

What is the most likely causative agent?

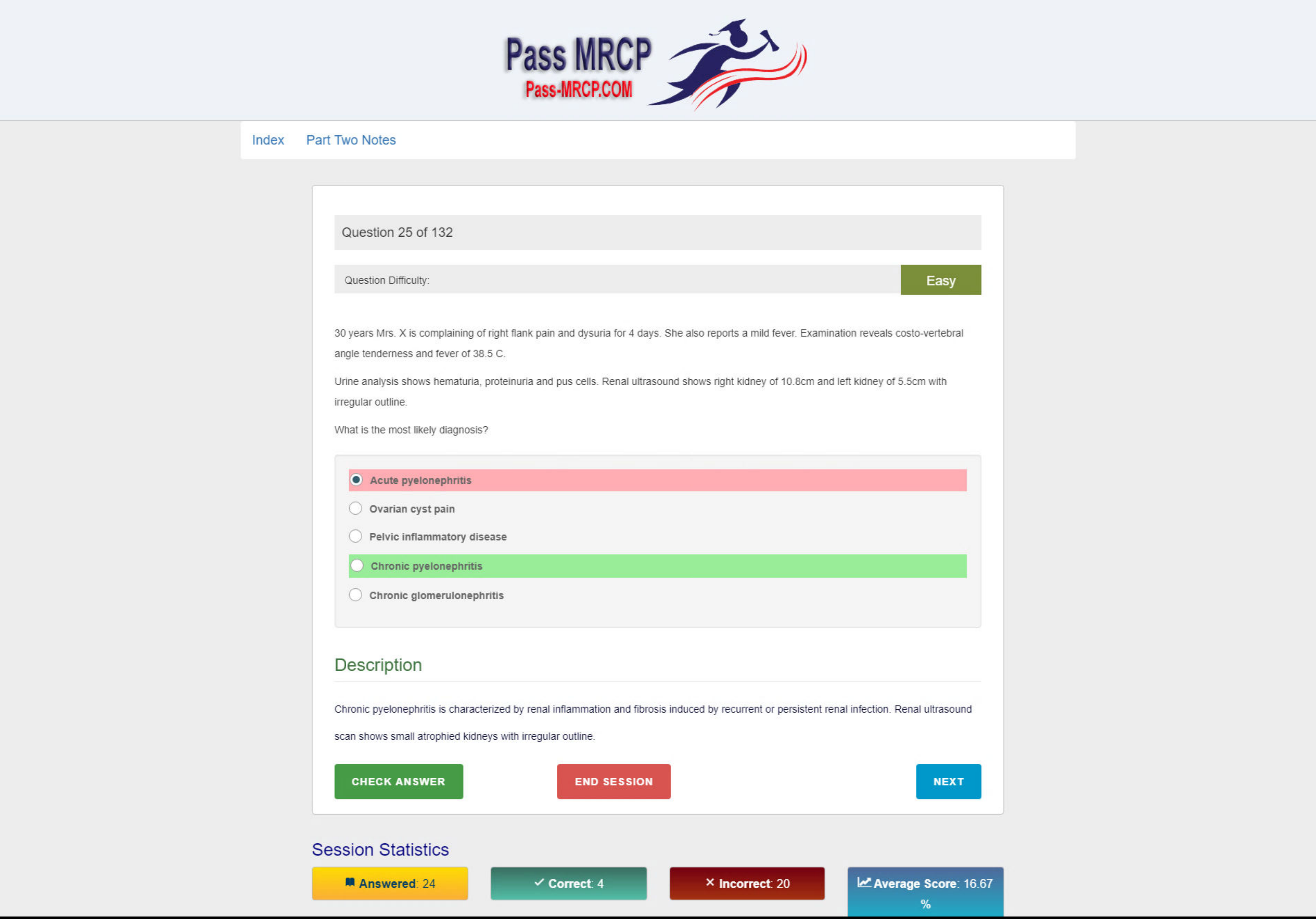
- ○ **Candida**
- ○ **Resistant E. coli strain**
- ○ **Neisseria gonorrhea**
- ○ **MRSA**
- ● **Chlamydia trachomatis**

Description

Candida urinary tract infections (UTIs) occur more commonly in uncontrolled diabetic patients.

Session Statistics

Answered: 23
✓ **Correct**: 4
× **Incorrect**: 19
Average Score: 17.39 %



Question 25 of 132

Question Difficulty: **Easy**

30 years Mrs. X is complaining of right flank pain and dysuria for 4 days. She also reports a mild fever. Examination reveals costo-vertebral angle tenderness and fever of 38.5 C.

Urine analysis shows hematuria, proteinuria and pus cells. Renal ultrasound shows right kidney of 10.8cm and left kidney of 5.5cm with irregular outline.

What is the most likely diagnosis?

- ● **Acute pyelonephritis**
- ○ **Ovarian cyst pain**
- ○ **Pelvic inflammatory disease**
- ○ **Chronic pyelonephritis**
- ○ **Chronic glomerulonephritis**

Description

Chronic pyelonephritis is characterized by renal inflammation and fibrosis induced by recurrent or persistent renal infection. Renal ultrasound scan shows small atrophied kidneys with irregular outline.

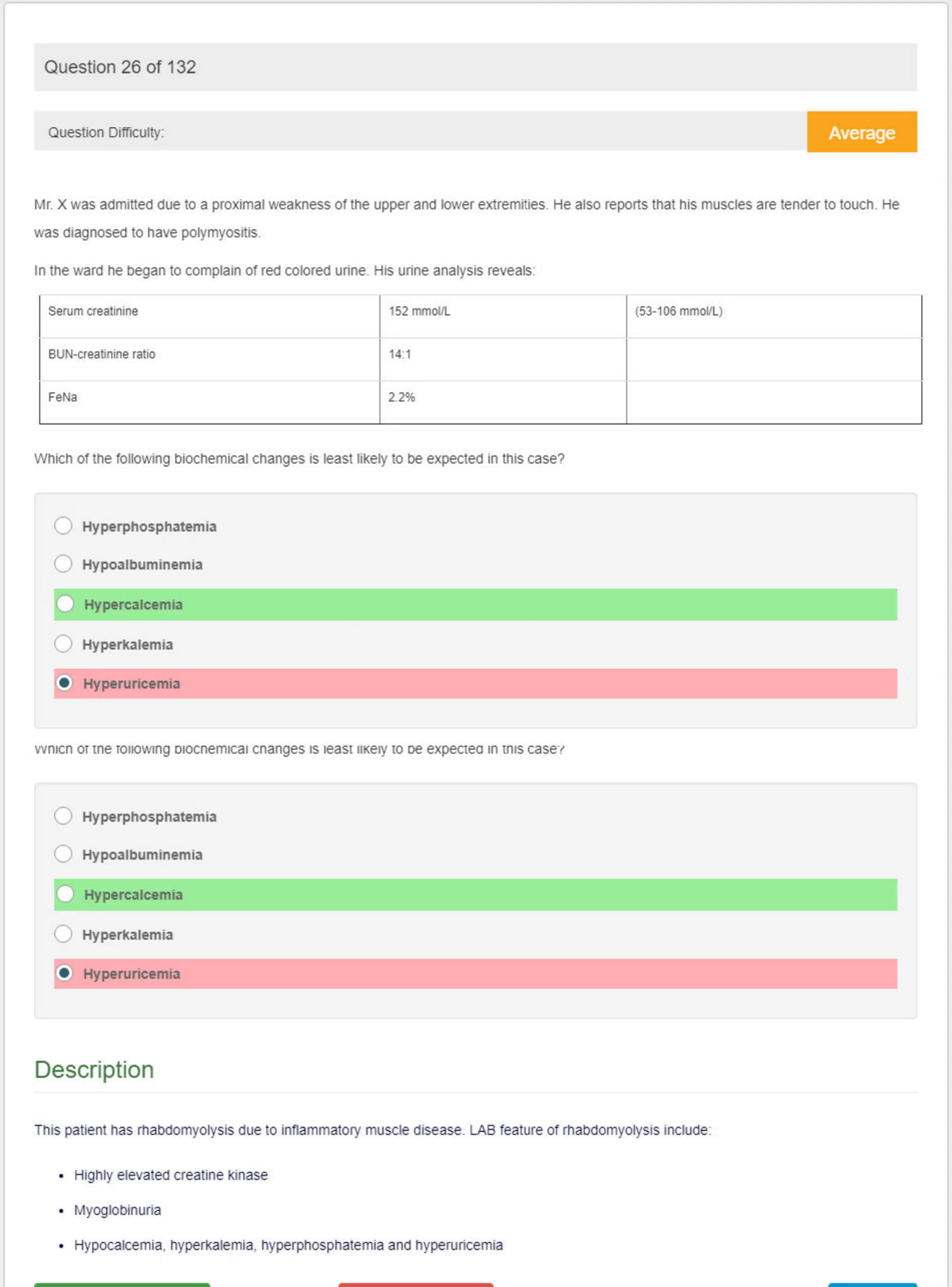
Session Statistics

Answered: 24

✓ **Correct**: 4

× **Incorrect**: 20

Average Score: 16.67 %



Question 26 of 132

Question Difficulty: **Average**

Mr. X was admitted due to a proximal weakness of the upper and lower extremities. He also reports that his muscles are tender to touch. He was diagnosed to have polymyositis.

In the ward he began to complain of red colored urine. His urine analysis reveals:

Serum creatinine	152 mmol/L	(53-106 mmol/L)
BUN-creatinine ratio	14:1	
FeNa	2.2%	

Which of the following biochemical changes is least likely to be expected in this case?

- ○ **Hyperphosphatemia**
- ○ **Hypoalbuminemia**
- ○ **Hypercalcemia**
- ○ **Hyperkalemia**
- ● **Hyperuricemia**

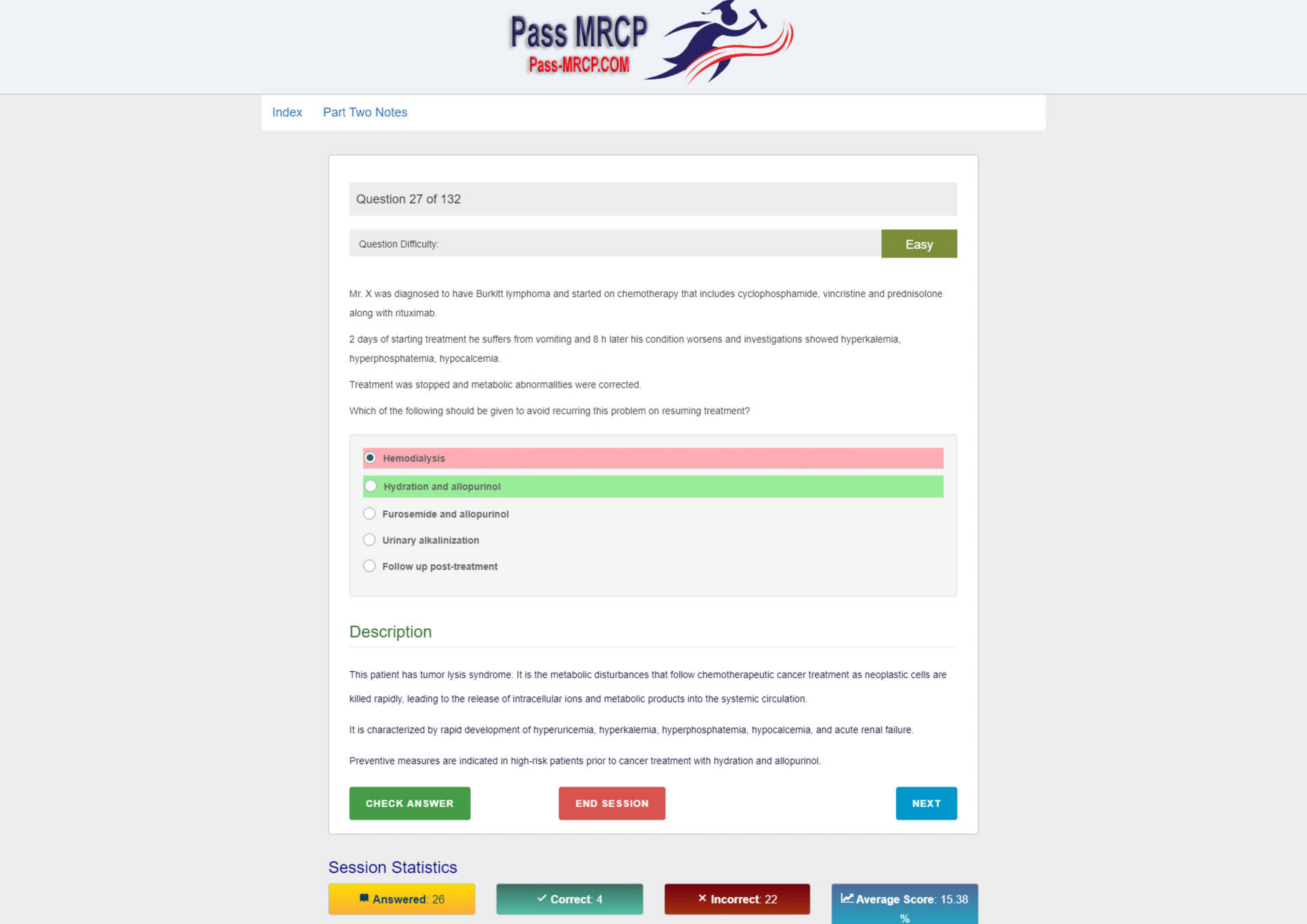
Which of the following biochemical changes is least likely to be expected in this case?

- ○ **Hyperphosphatemia**
- ○ **Hypoalbuminemia**
- ○ **Hypercalcemia**
- ○ **Hyperkalemia**
- ● **Hyperuricemia**

Description

This patient has rhabdomyolysis due to inflammatory muscle disease. LAB feature of rhabdomyolysis include:

- Highly elevated creatine kinase
- Myoglobinuria
- Hypocalcemia, hyperkalemia, hyperphosphatemia and hyperuricemia



Question 27 of 132

Question Difficulty: Easy

Mr. X was diagnosed to have Burkitt lymphoma and started on chemotherapy that includes cyclophosphamide, vincristine and prednisolone along with rituximab.

2 days of starting treatment he suffers from vomiting and 8 h later his condition worsens and investigations showed hyperkalemia, hyperphosphatemia, hypocalcemia.

Treatment was stopped and metabolic abnormalities were corrected.

Which of the following should be given to avoid recurring this problem on resuming treatment?

- ● **Hemodialysis**
- ○ **Hydration and allopurinol**
- ○ **Furosemide and allopurinol**
- ○ **Urinary alkalinization**
- ○ **Follow up post-treatment**

Description

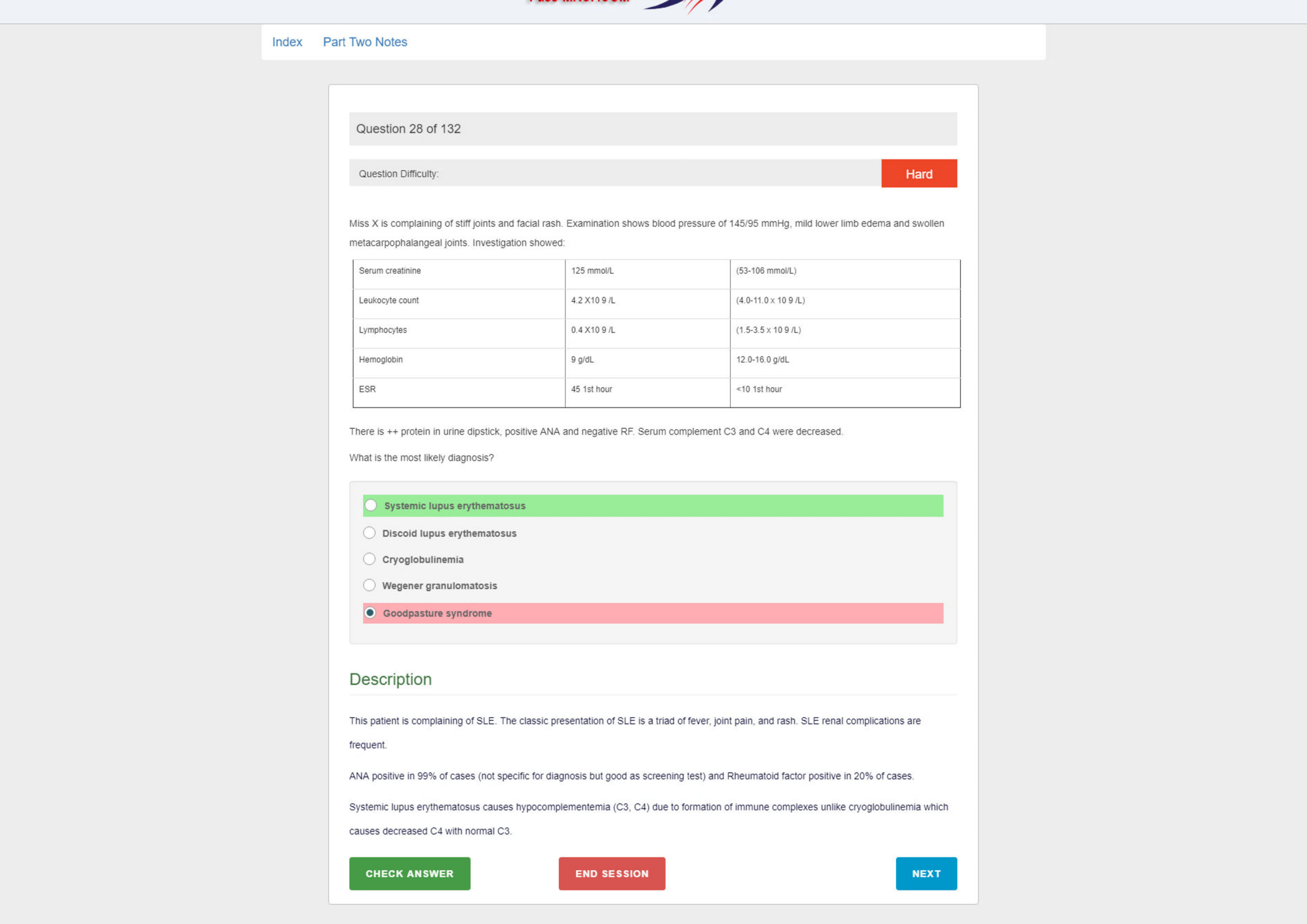
This patient has tumor lysis syndrome. It is the metabolic disturbances that follow chemotherapeutic cancer treatment as neoplastic cells are killed rapidly, leading to the release of intracellular ions and metabolic products into the systemic circulation.

It is characterized by rapid development of hyperuricemia, hyperkalemia, hyperphosphatemia, hypocalcemia, and acute renal failure.

Preventive measures are indicated in high-risk patients prior to cancer treatment with hydration and allopurinol.

Session Statistics

Answered: 26
✓ **Correct**: 4
✕ **Incorrect**: 22
Average Score: 15.38 %



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Question Difficulty: Hard

Miss X is complaining of stiff joints and facial rash. Examination shows blood pressure of 145/95 mmHg, mild lower limb edema and swollen metacarpophalangeal joints. Investigation showed:

Serum creatinine	125 mmol/L	(53-106 mmol/L)
Leukocyte count	4.2 X10 9 /L	(4.0-11.0 x 10 9 /L)
Lymphocytes	0.4 X10 9 /L	(1.5-3.5 x 10 9 /L)
Hemoglobin	9 g/dL	12.0-16.0 g/dL
ESR	45 1st hour	<10 1st hour

There is ++ protein in urine dipstick, positive ANA and negative RF. Serum complement C3 and C4 were decreased.

What is the most likely diagnosis?

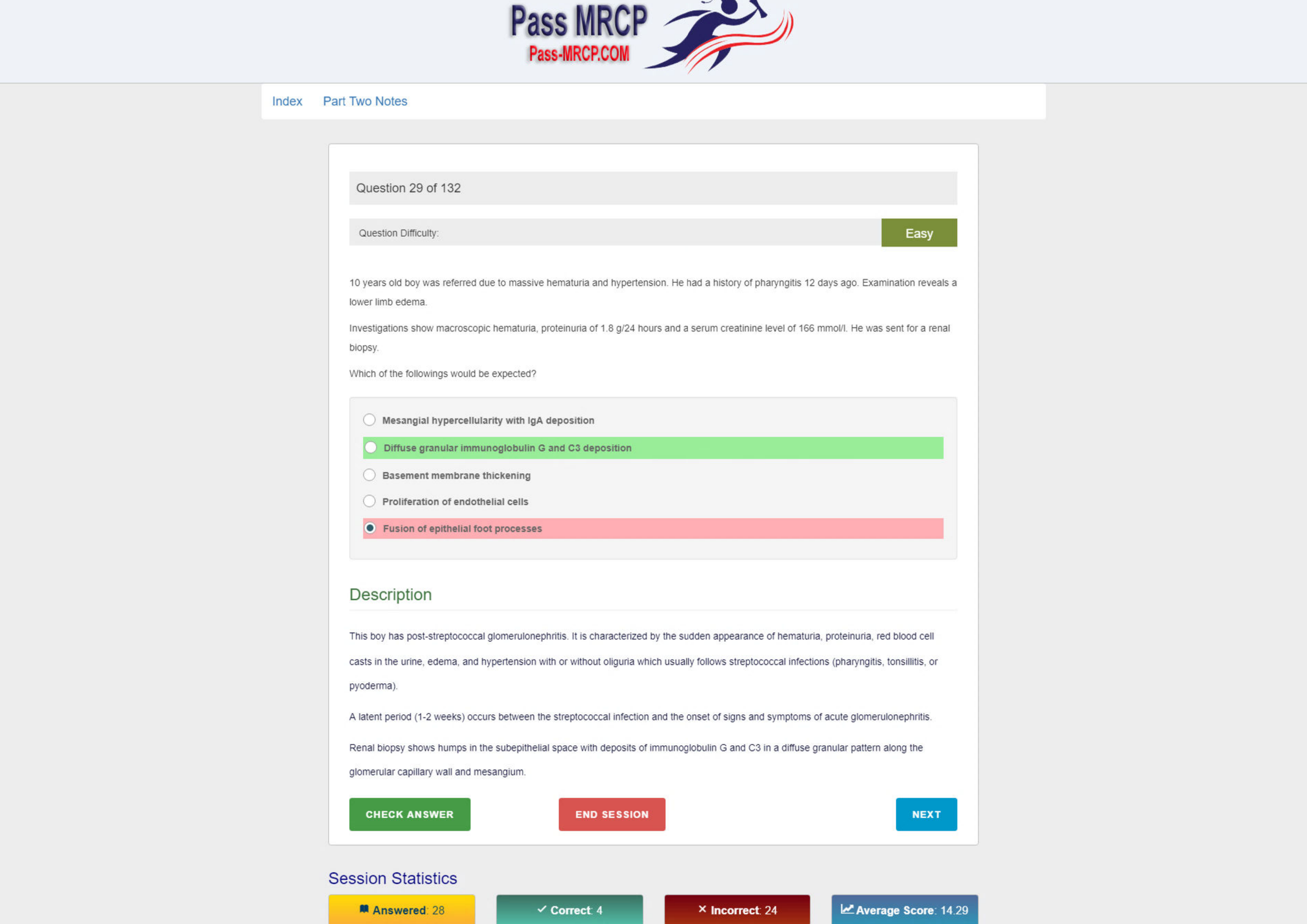
- ○ **Systemic lupus erythematosus**
- ○ **Discoid lupus erythematosus**
- ○ **Cryoglobulinemia**
- ○ **Wegener granulomatosis**
- ● **Goodpasture syndrome**

Description

This patient is complaining of SLE. The classic presentation of SLE is a triad of fever, joint pain, and rash. SLE renal complications are frequent.

ANA positive in 99% of cases (not specific for diagnosis but good as screening test) and Rheumatoid factor positive in 20% of cases.

Systemic lupus erythematosus causes hypocomplementemia (C3, C4) due to formation of immune complexes unlike cryoglobulinemia which causes decreased C4 with normal C3.



Question 29 of 132

Question Difficulty: **Easy**

10 years old boy was referred due to massive hematuria and hypertension. He had a history of pharyngitis 12 days ago. Examination reveals a lower limb edema.

Investigations show macroscopic hematuria, proteinuria of 1.8 g/24 hours and a serum creatinine level of 166 mmol/l. He was sent for a renal biopsy.

Which of the followings would be expected?

- ○ **Mesangial hypercellularity with IgA deposition**
- ○ **Diffuse granular immunoglobulin G and C3 deposition**
- ○ **Basement membrane thickening**
- ○ **Proliferation of endothelial cells**
- ● **Fusion of epithelial foot processes**

Description

This boy has post-streptococcal glomerulonephritis. It is characterized by the sudden appearance of hematuria, proteinuria, red blood cell casts in the urine, edema, and hypertension with or without oliguria which usually follows streptococcal infections (pharyngitis, tonsillitis, or pyoderma).

A latent period (1-2 weeks) occurs between the streptococcal infection and the onset of signs and symptoms of acute glomerulonephritis.

Renal biopsy shows humps in the subepithelial space with deposits of immunoglobulin G and C3 in a diffuse granular pattern along the glomerular capillary wall and mesangium.

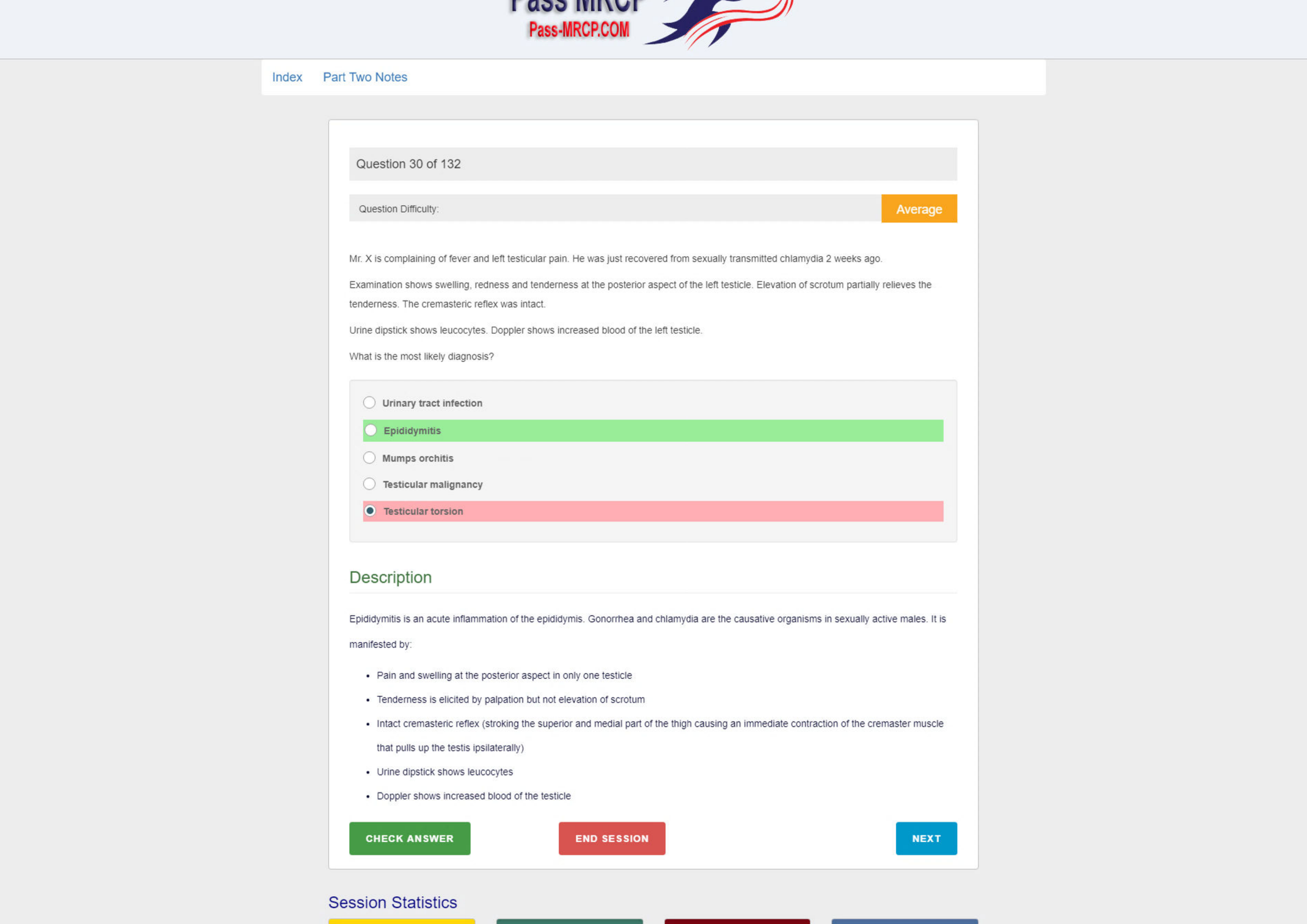
Session Statistics

Answered: 28

✓ Correct: 4

× Incorrect: 24

Average Score: 14.29



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Question Difficulty: Average

Mr. X is complaining of fever and left testicular pain. He was just recovered from sexually transmitted chlamydia 2 weeks ago.

Examination shows swelling, redness and tenderness at the posterior aspect of the left testicle. Elevation of scrotum partially relieves the tenderness. The cremasteric reflex was intact.

Urine dipstick shows leucocytes. Doppler shows increased blood of the left testicle.

What is the most likely diagnosis?

○ **Urinary tract infection**

○ **Epididymitis**

○ **Mumps orchitis**

○ **Testicular malignancy**

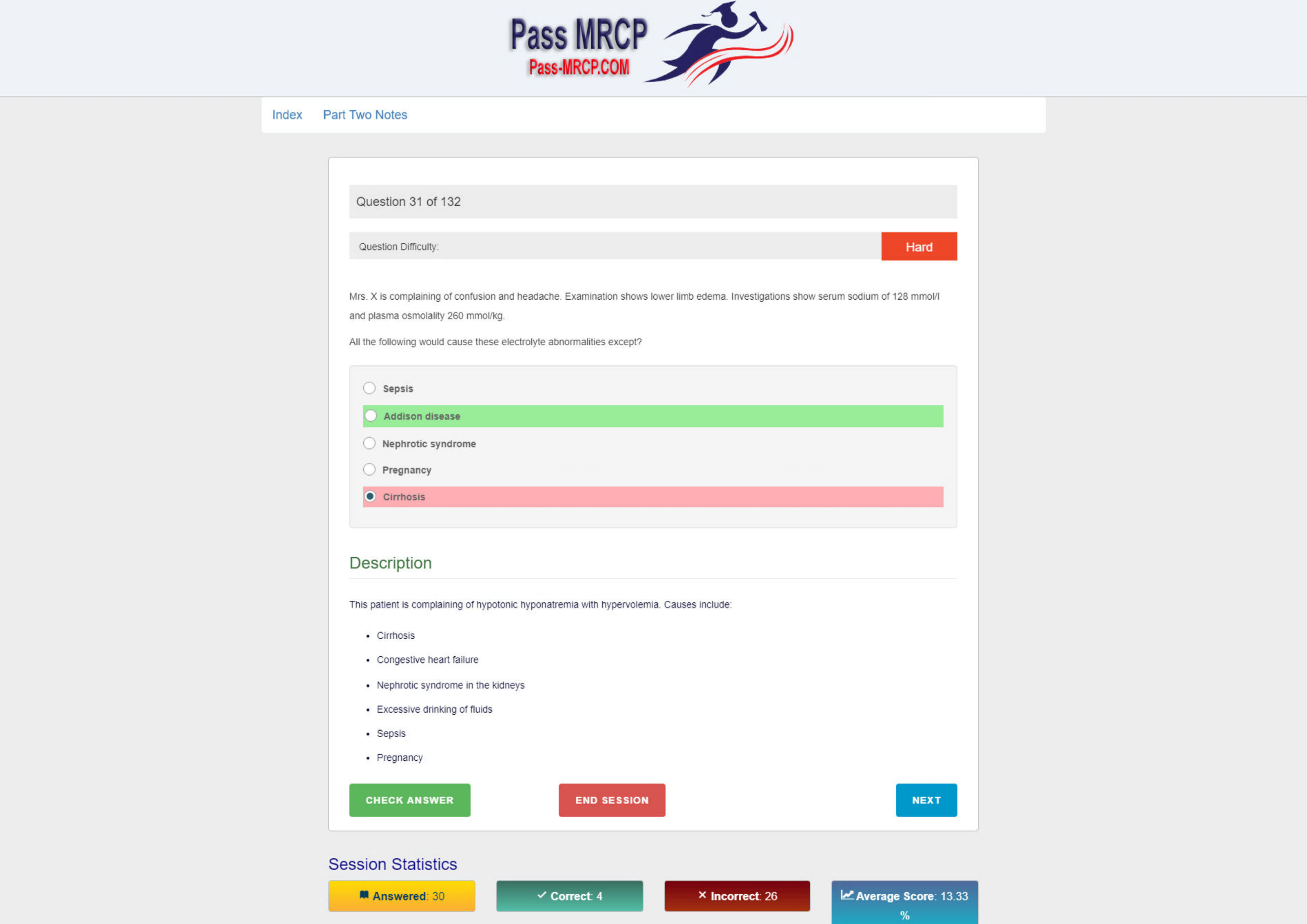
● **Testicular torsion**

Description

Epididymitis is an acute inflammation of the epididymis. Gonorrhea and chlamydia are the causative organisms in sexually active males. It is manifested by:

- Pain and swelling at the posterior aspect in only one testicle
- Tenderness is elicited by palpation but not elevation of scrotum
- Intact cremasteric reflex (stroking the superior and medial part of the thigh causing an immediate contraction of the cremaster muscle that pulls up the testis ipsilaterally)
- Urine dipstick shows leucocytes
- Doppler shows increased blood of the testicle

Session Statistics



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Question Difficulty: Hard

Mrs. X is complaining of confusion and headache. Examination shows lower limb edema. Investigations show serum sodium of 128 mmol/l and plasma osmolality 260 mmol/kg.

All the following would cause these electrolyte abnormalities except?

○ Sepsis
○ Addison disease
○ Nephrotic syndrome
○ Pregnancy
● Cirrhosis

Description

This patient is complaining of hypotonic hyponatremia with hypervolemia. Causes include:

- Cirrhosis
- Congestive heart failure
- Nephrotic syndrome in the kidneys
- Excessive drinking of fluids
- Sepsis
- Pregnancy

CHECK ANSWER
END SESSION
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Session Statistics

Answered: 30
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✕ Incorrect: 26
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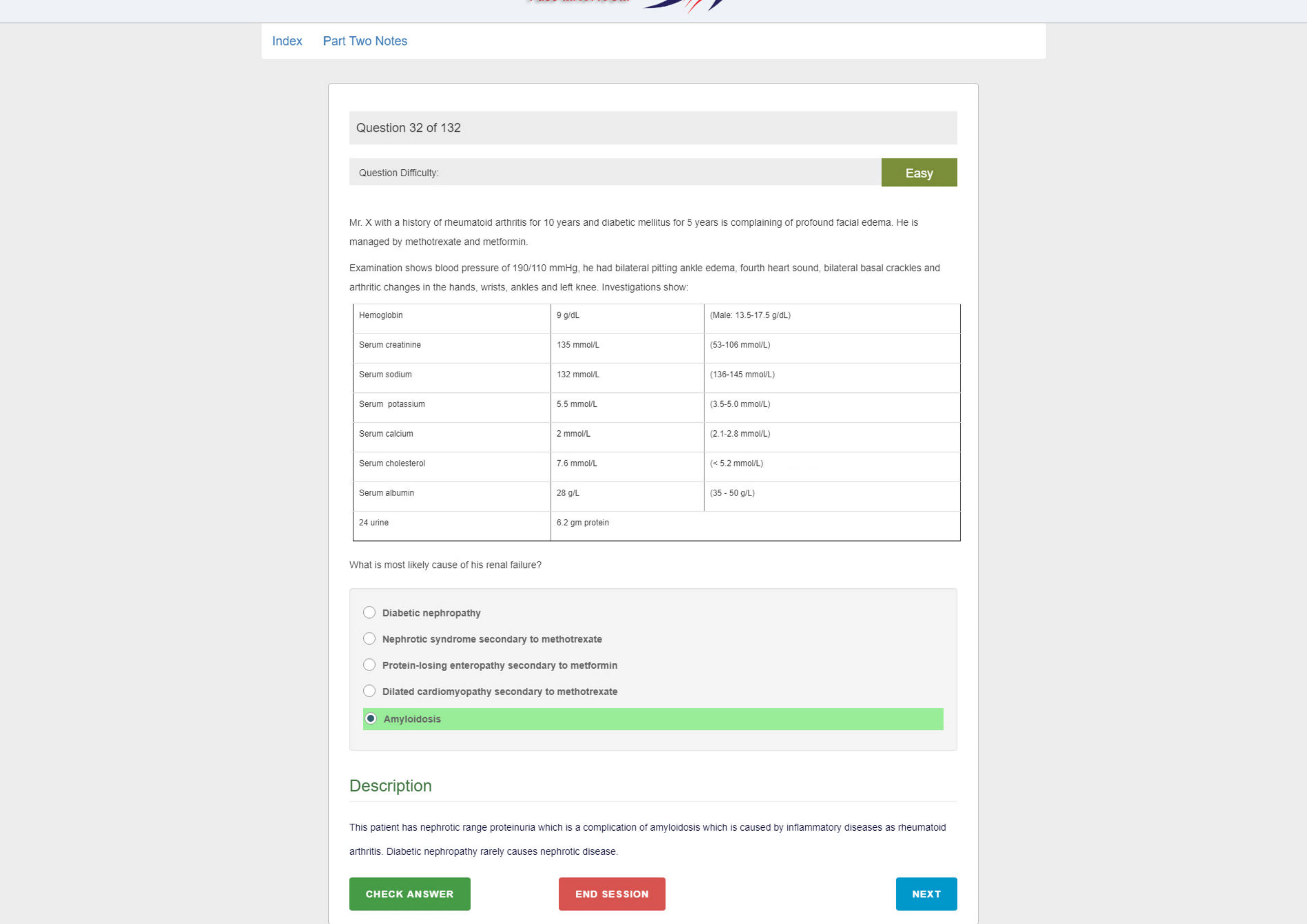

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Question Difficulty: Easy

Mr. X with a history of rheumatoid arthritis for 10 years and diabetic mellitus for 5 years is complaining of profound facial edema. He is managed by methotrexate and metformin.

Examination shows blood pressure of 190/110 mmHg, he had bilateral pitting ankle edema, fourth heart sound, bilateral basal crackles and arthritic changes in the hands, wrists, ankles and left knee. Investigations show:

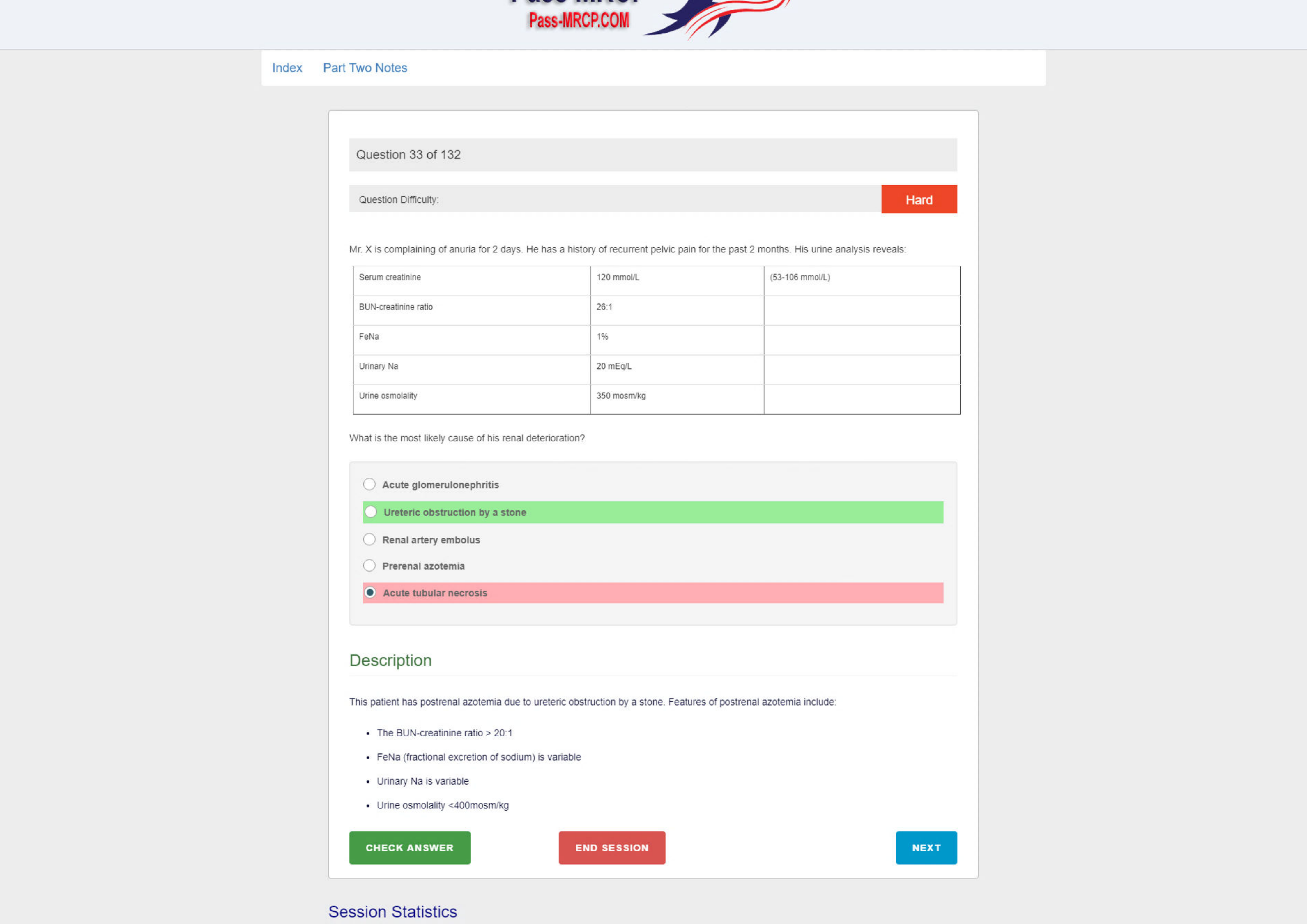
Hemoglobin	9 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	135 mmol/L	(53-106 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	5.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	7.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	28 g/L	(35 - 50 g/L)
24 urine	6.2 gm protein	

What is most likely cause of his renal failure?

- ○ **Diabetic nephropathy**
- ○ **Nephrotic syndrome secondary to methotrexate**
- ○ **Protein-losing enteropathy secondary to metformin**
- ○ **Dilated cardiomyopathy secondary to methotrexate**
- ● **Amyloidosis**

Description

This patient has nephrotic range proteinuria which is a complication of amyloidosis which is caused by inflammatory diseases as rheumatoid arthritis. Diabetic nephropathy rarely causes nephrotic disease.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Question Difficulty:
Hard

Mr. X is complaining of anuria for 2 days. He has a history of recurrent pelvic pain for the past 2 months. His urine analysis reveals:

Serum creatinine	120 mmol/L	(53-106 mmol/L)
BUN-creatinine ratio	26:1	
FeNa	1%	
Urinary Na	20 mEq/L	
Urine osmolality	350 mosm/kg	

What is the most likely cause of his renal deterioration?

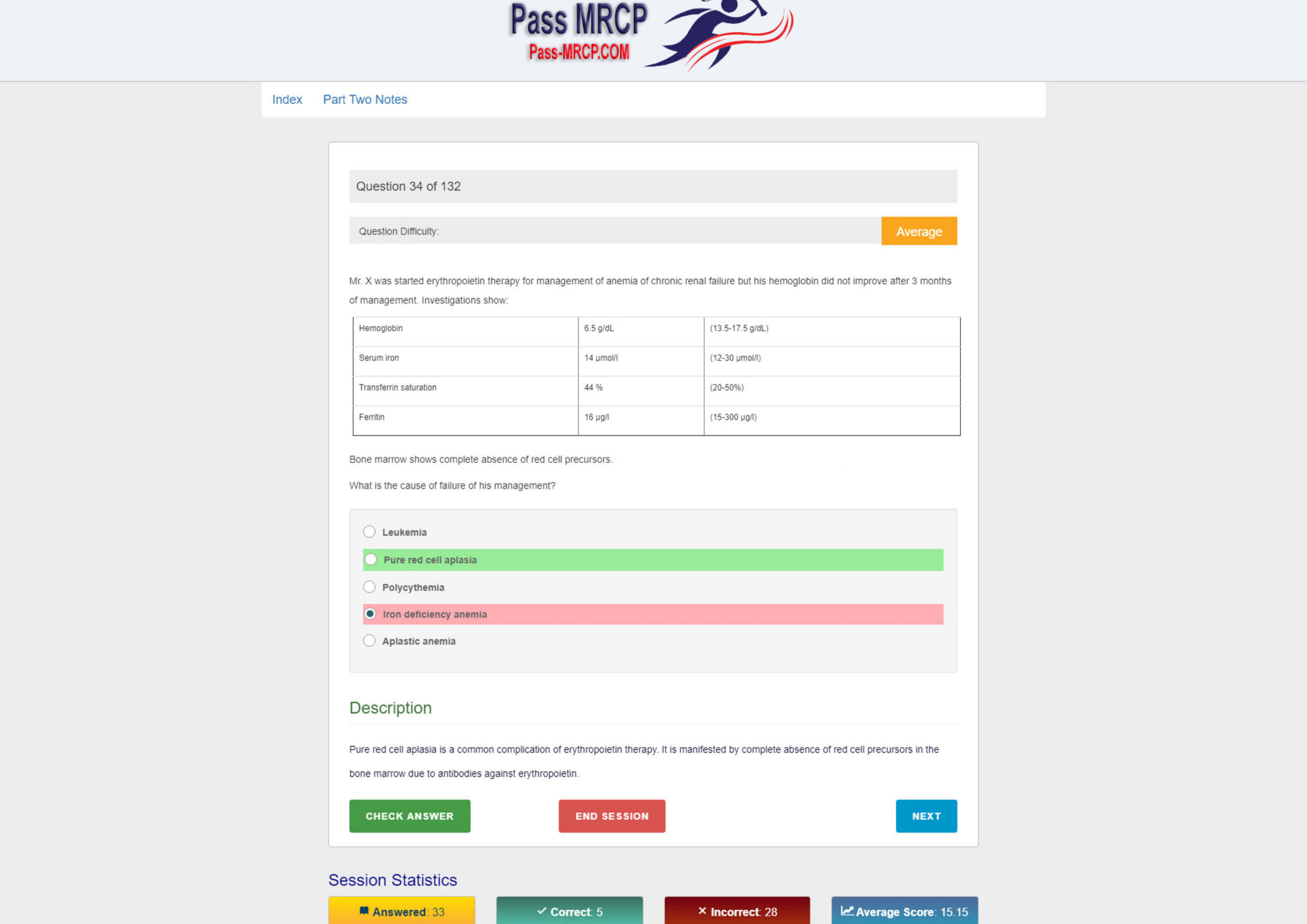
○ **Acute glomerulonephritis**
○ **Ureteric obstruction by a stone**
○ **Renal artery embolus**
○ **Prerenal azotemia**
● **Acute tubular necrosis**

Description

This patient has postrenal azotemia due to ureteric obstruction by a stone. Features of postrenal azotemia include:

- The BUN-creatinine ratio > 20:1
- FeNa (fractional excretion of sodium) is variable
- Urinary Na is variable
- Urine osmolality <400mosm/kg

CHECK ANSWER
END SESSION
NEXT
Session Statistics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Question Difficulty: Average

Mr. X was started erythropoietin therapy for management of anemia of chronic renal failure but his hemoglobin did not improve after 3 months of management. Investigations show:

Hemoglobin	6.5 g/dL	(13.5-17.5 g/dL)
Serum iron	14 µmol/l	(12-30 µmol/l)
Transferrin saturation	44 %	(20-50%)
Ferritin	16 µg/l	(15-300 µg/l)

Bone marrow shows complete absence of red cell precursors.

What is the cause of failure of his management?

- ○ Leukemia
- ○ Pure red cell aplasia
- ○ Polycythemia
- ● Iron deficiency anemia
- ○ Aplastic anemia

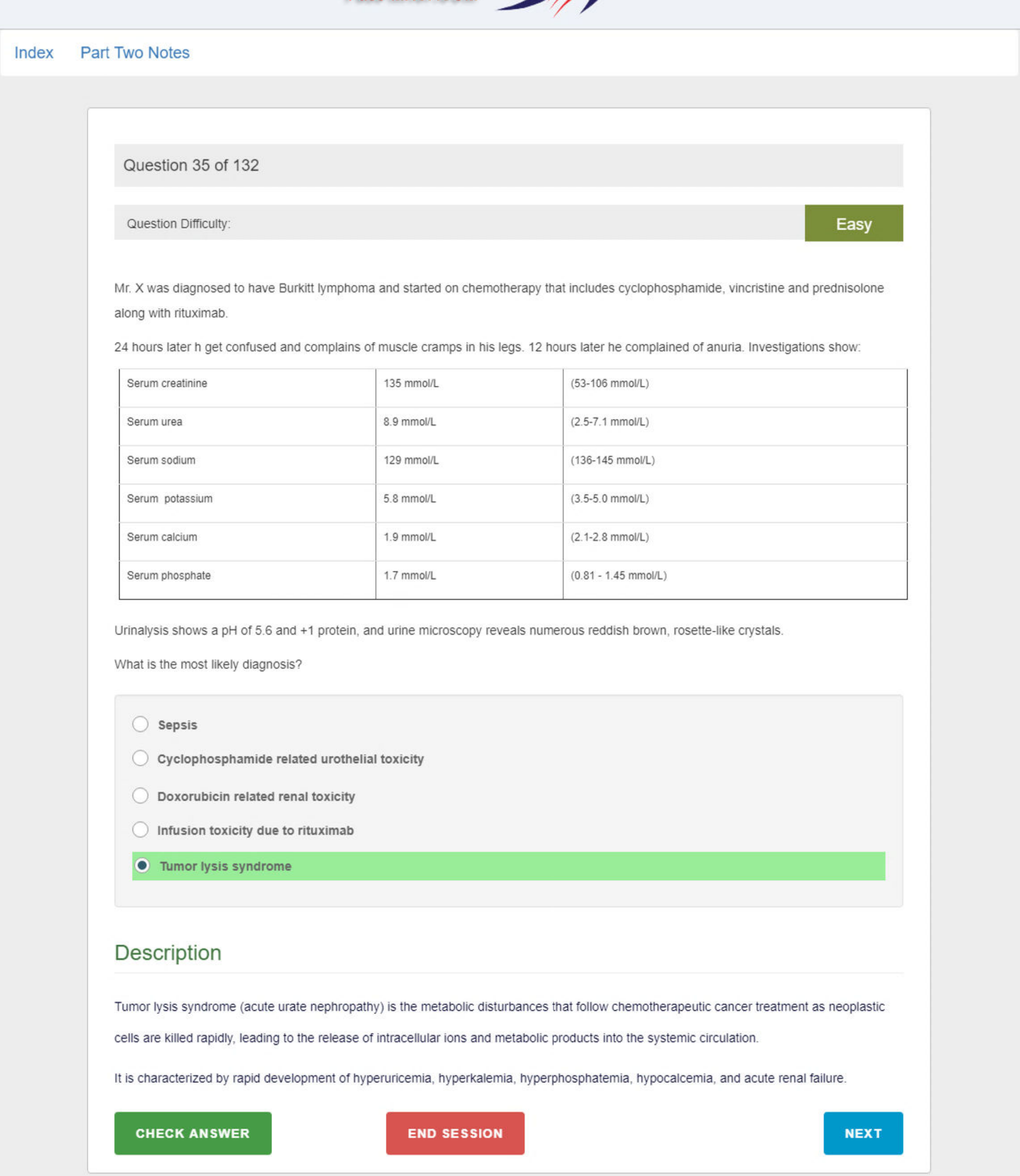
Description

Pure red cell aplasia is a common complication of erythropoietin therapy. It is manifested by complete absence of red cell precursors in the bone marrow due to antibodies against erythropoietin.

CHECK ANSWER
END SESSION
NEXT

Session Statistics

Answered: 33
✓ Correct: 5
✕ Incorrect: 28
Average Score: 15.15



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Mr. X was diagnosed to have Burkitt lymphoma and started on chemotherapy that includes cyclophosphamide, vincristine and prednisolone along with rituximab.

24 hours later h get confused and complains of muscle cramps in his legs. 12 hours later he complained of anuria. Investigations show:

Serum creatinine	135 mmol/L	(53-106 mmol/L)
Serum urea	8.9 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	129 mmol/L	(136-145 mmol/L)
Serum potassium	5.8 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.9 mmol/L	(2.1-2.8 mmol/L)
Serum phosphate	1.7 mmol/L	(0.81 - 1.45 mmol/L)

Urinalysis shows a pH of 5.6 and +1 protein, and urine microscopy reveals numerous reddish brown, rosette-like crystals.

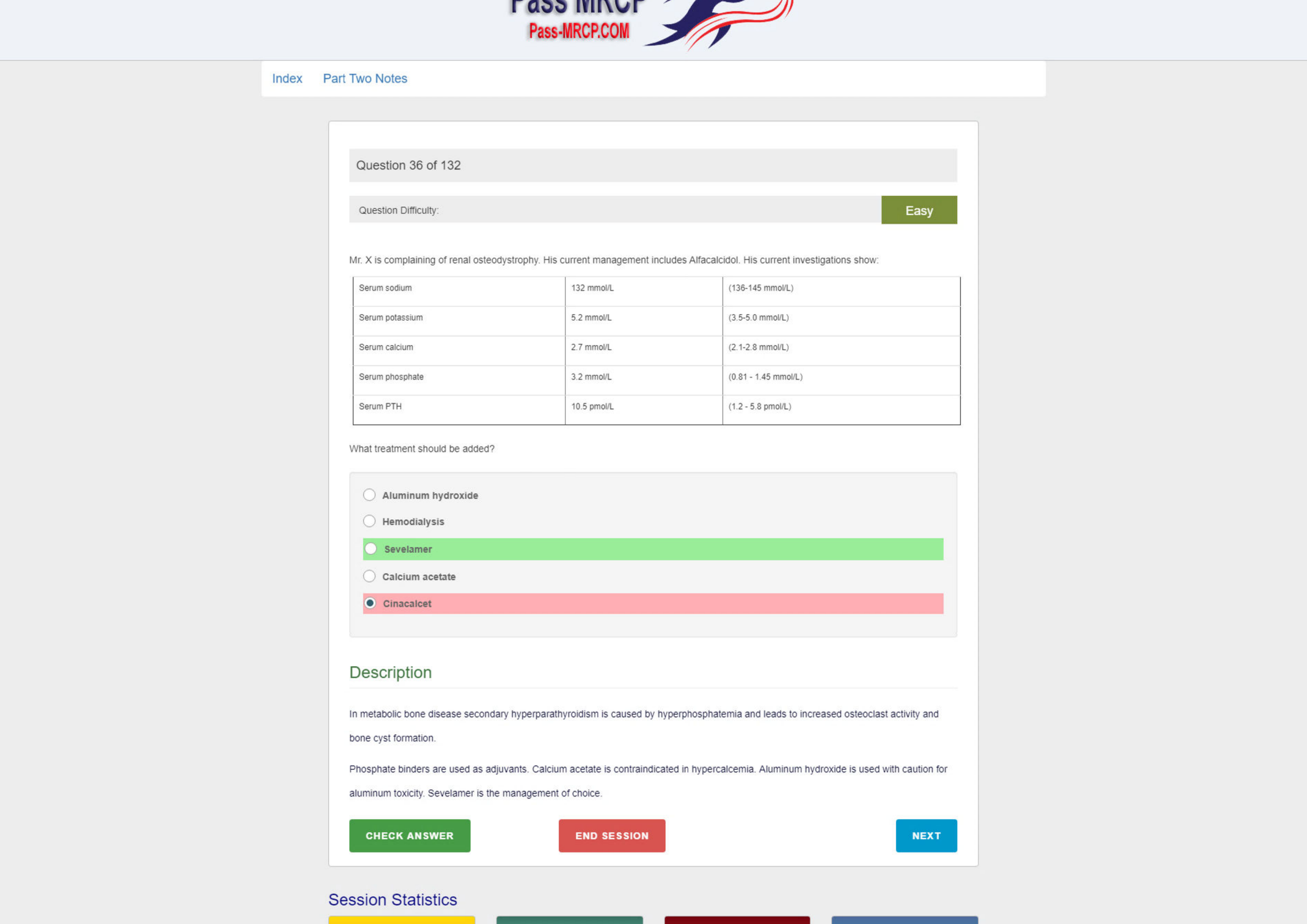
What is the most likely diagnosis?

- ○ **Sepsis**
- ○ **Cyclophosphamide related urothelial toxicity**
- ○ **Doxorubicin related renal toxicity**
- ○ **Infusion toxicity due to rituximab**
- ● **Tumor lysis syndrome**

Description

Tumor lysis syndrome (acute urate nephropathy) is the metabolic disturbances that follow chemotherapeutic cancer treatment as neoplastic cells are killed rapidly, leading to the release of intracellular ions and metabolic products into the systemic circulation.

It is characterized by rapid development of hyperuricemia, hyperkalemia, hyperphosphatemia, hypocalcemia, and acute renal failure.



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Question Difficulty: Easy

Mr. X is complaining of renal osteodystrophy. His current management includes Alfacalcidol. His current investigations show:

Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	5.2 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.7 mmol/L	(2.1-2.8 mmol/L)
Serum phosphate	3.2 mmol/L	(0.81 - 1.45 mmol/L)
Serum PTH	10.5 pmol/L	(1.2 - 5.8 pmol/L)

What treatment should be added?

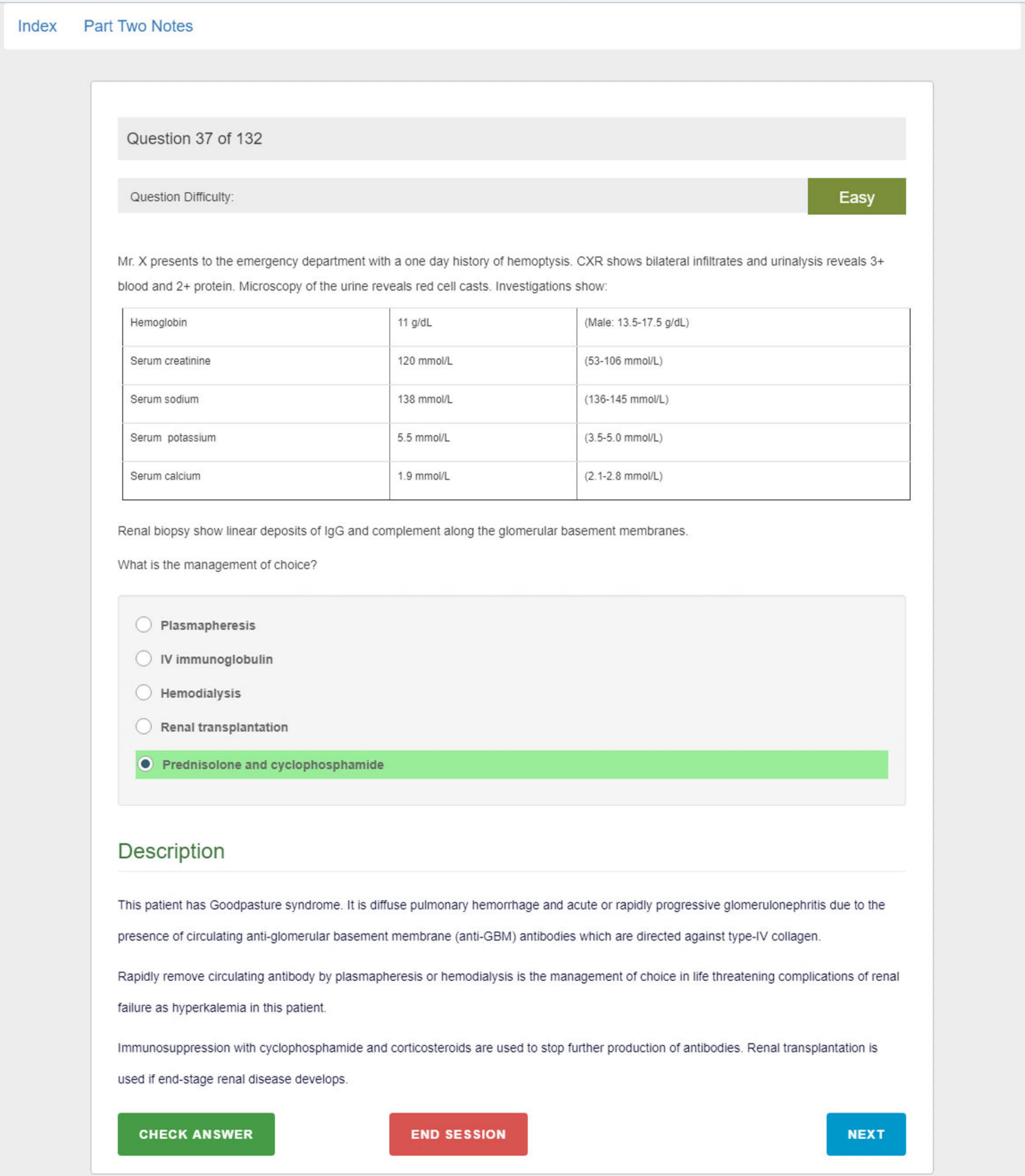
- ○ **Aluminum hydroxide**
- ○ **Hemodialysis**
- ○ **Sevelamer**
- ○ **Calcium acetate**
- ● **Cinacalcet**

Description

In metabolic bone disease secondary hyperparathyroidism is caused by hyperphosphatemia and leads to increased osteoclast activity and bone cyst formation.

Phosphate binders are used as adjuvants. Calcium acetate is contraindicated in hypercalcemia. Aluminum hydroxide is used with caution for aluminum toxicity. Sevelamer is the management of choice.

Session Statistics



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Question Difficulty: Easy

Mr. X presents to the emergency department with a one day history of hemoptysis. CXR shows bilateral infiltrates and urinalysis reveals 3+ blood and 2+ protein. Microscopy of the urine reveals red cell casts. Investigations show:

Hemoglobin	11 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	120 mmol/L	(53-106 mmol/L)
Serum sodium	138 mmol/L	(136-145 mmol/L)
Serum potassium	5.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.9 mmol/L	(2.1-2.8 mmol/L)

Renal biopsy show linear deposits of IgG and complement along the glomerular basement membranes.

What is the management of choice?

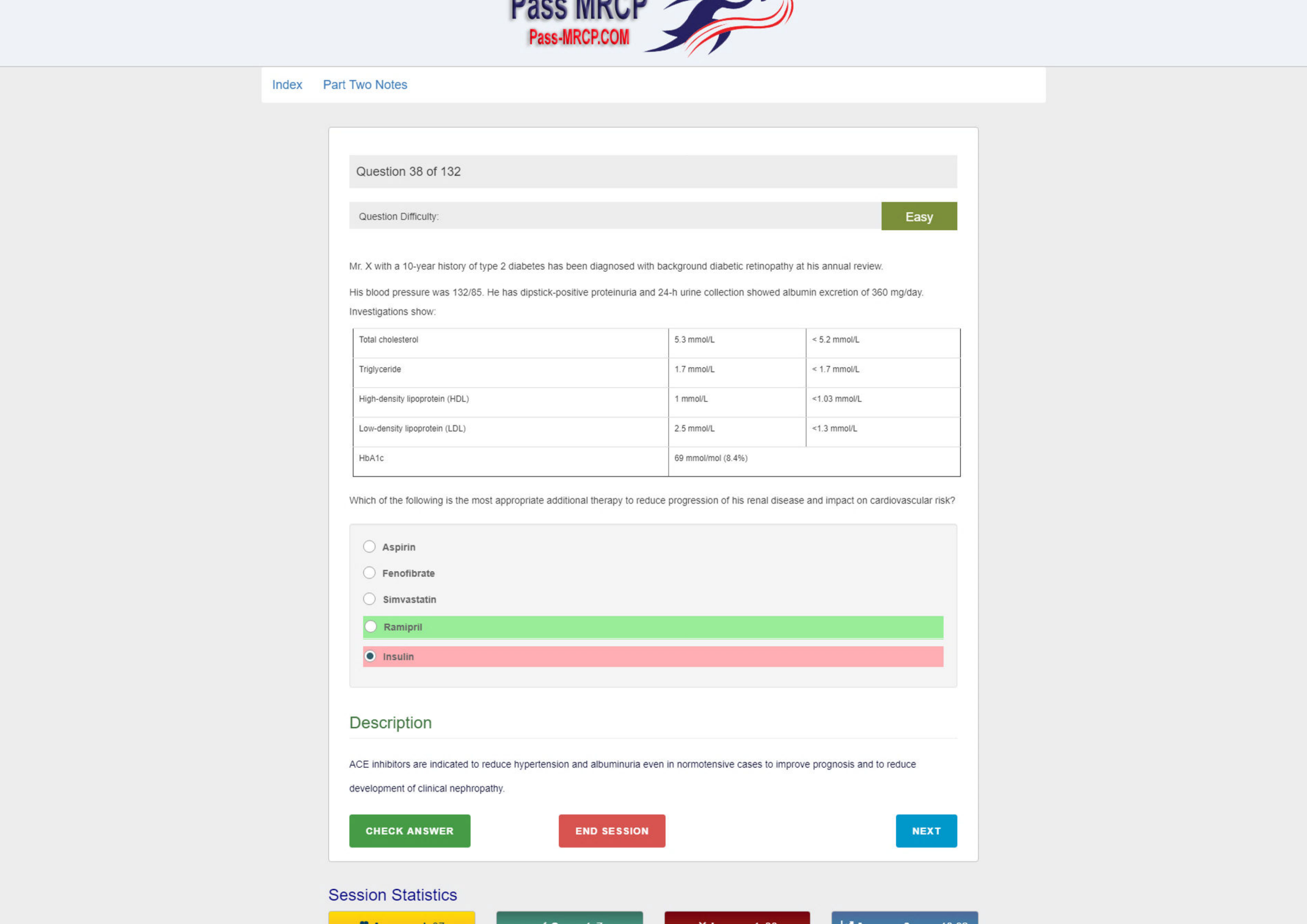
○ **Plasmapheresis**
○ **IV immunoglobulin**
○ **Hemodialysis**
○ **Renal transplantation**
● **Prednisolone and cyclophosphamide**

Description

This patient has Goodpasture syndrome. It is diffuse pulmonary hemorrhage and acute or rapidly progressive glomerulonephritis due to the presence of circulating anti-glomerular basement membrane (anti-GBM) antibodies which are directed against type-IV collagen.

Rapidly remove circulating antibody by plasmapheresis or hemodialysis is the management of choice in life threatening complications of renal failure as hyperkalemia in this patient.

Immunosuppression with cyclophosphamide and corticosteroids are used to stop further production of antibodies. Renal transplantation is used if end-stage renal disease develops.



Question 38 of 132

Question Difficulty: Easy

Mr. X with a 10-year history of type 2 diabetes has been diagnosed with background diabetic retinopathy at his annual review.

His blood pressure was 132/85. He has dipstick-positive proteinuria and 24-h urine collection showed albumin excretion of 360 mg/day. Investigations show:

Total cholesterol	5.3 mmol/L	< 5.2 mmol/L
Triglyceride	1.7 mmol/L	< 1.7 mmol/L
High-density lipoprotein (HDL)	1 mmol/L	<1.03 mmol/L
Low-density lipoprotein (LDL)	2.5 mmol/L	<1.3 mmol/L
HbA1c	69 mmol/mol (8.4%)	

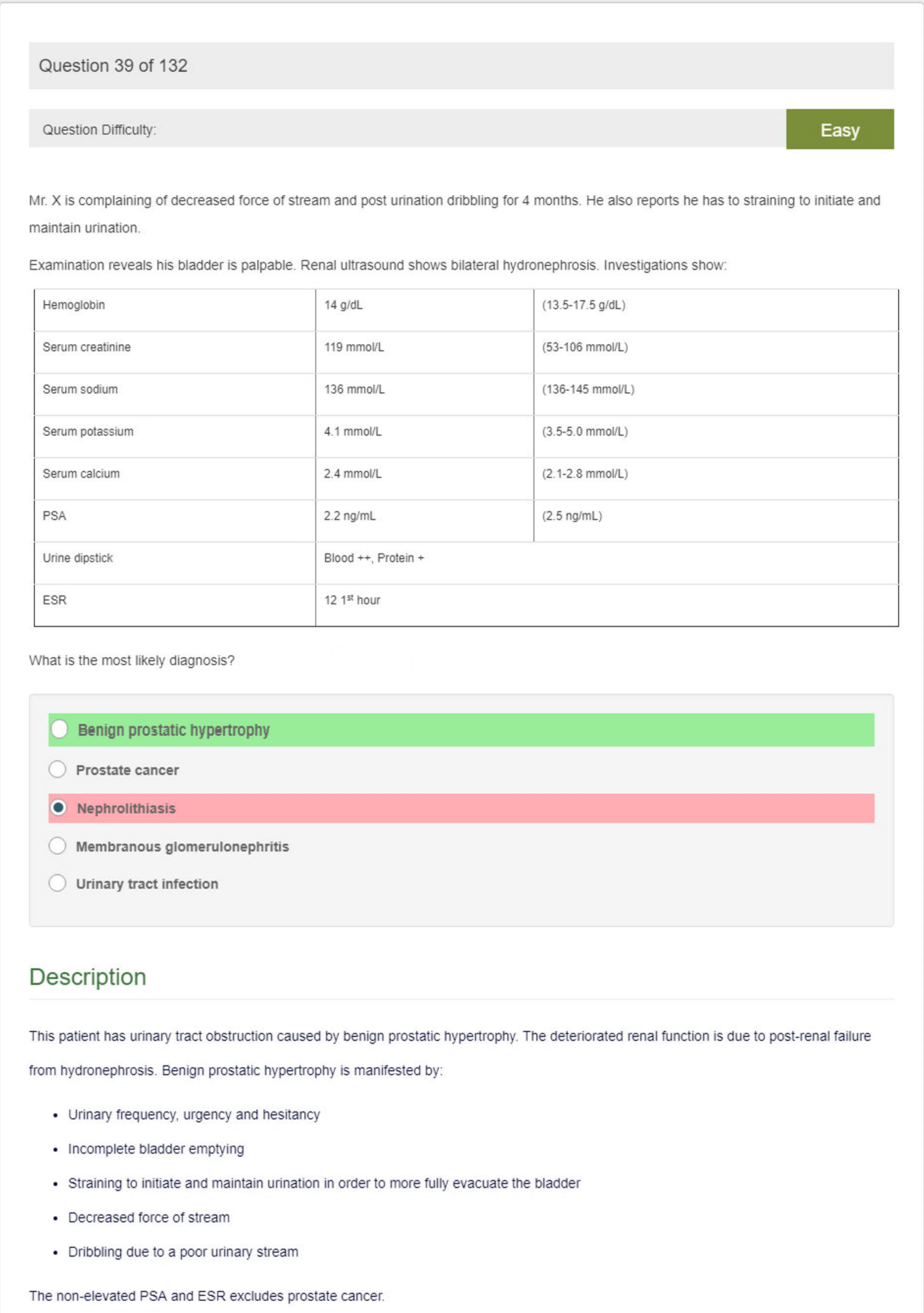
Which of the following is the most appropriate additional therapy to reduce progression of his renal disease and impact on cardiovascular risk?

○ Aspirin
○ Fenofibrate
○ Simvastatin
○ Ramipril
● Insulin

Description

ACE inhibitors are indicated to reduce hypertension and albuminuria even in normotensive cases to improve prognosis and to reduce development of clinical nephropathy.

Session Statistics



Question 39 of 132

Question Difficulty: **Easy**

Mr. X is complaining of decreased force of stream and post urination dribbling for 4 months. He also reports he has to straining to initiate and maintain urination.

Examination reveals his bladder is palpable. Renal ultrasound shows bilateral hydronephrosis. Investigations show:

Hemoglobin	14 g/dL	(13.5-17.5 g/dL)
Serum creatinine	119 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.4 mmol/L	(2.1-2.8 mmol/L)
PSA	2.2 ng/mL	(2.5 ng/mL)
Urine dipstick	Blood ++, Protein +	
ESR	12 1st hour	

What is the most likely diagnosis?

○ **Benign prostatic hypertrophy**

○ **Prostate cancer**

● **Nephrolithiasis**

○ **Membranous glomerulonephritis**

○ **Urinary tract infection**

Description

This patient has urinary tract obstruction caused by benign prostatic hypertrophy. The deteriorated renal function is due to post-renal failure from hydronephrosis. Benign prostatic hypertrophy is manifested by:

- Urinary frequency, urgency and hesitancy
- Incomplete bladder emptying
- Straining to initiate and maintain urination in order to more fully evacuate the bladder
- Decreased force of stream
- Dribbling due to a poor urinary stream

The non-elevated PSA and ESR excludes prostate cancer.

Question 40 of 132

Question Difficulty: **Easy**

25 years Mr. X is complaining of long history of polyuria and polydipsia. He has a past medical history of renal stones.

Examination reveals normal blood pressure. Investigations show:

Serum creatinine	67 mmol/L	(53-106 mmol/L)
Serum urea	8.9 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	134 mmol/L	(136-145 mmol/L)
Serum potassium	3.3 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.2 mmol/L	(2.1-2.8 mmol/L)
24 urinary calcium	12 mmol	(15-20 mmol)
Serum chloride	80 mmol/L	(95-105 mmol/L)
Serum bicarbonate	34 mmol/L	(22-28 mmol/L)
Plasma renin activity	4 ng/(mL x hour)	0.29 - 1.9 ng/(mL x hour)
Serum aldosterone	16 ng/dl	(2 - 9 ng/dl)

What is the most likely diagnosis?

Serum calcium	2.2 mmol/L	(2.1-2.8 mmol/L)
24 urinary calcium	12 mmol	(15-20 mmol)
Serum chloride	80 mmol/L	(95-105 mmol/L)
Serum bicarbonate	34 mmol/L	(22-28 mmol/L)
Plasma renin activity	4 ng/(mL x hour)	0.29 - 1.9 ng/(mL x hour)
Serum aldosterone	16 ng/dl	(2 - 9 ng/dl)

What is the most likely diagnosis?

- ○ **Gitelman syndrome**
- ○ **Conn syndrome**
- ○ **Alport syndrome**
- ○ **Liddle syndrome**
- ● **Bartter syndrome**

Description

Gitelman syndrome is a mild form of Bartter syndrome. It has the same features of Barter syndrome as hypokalemia, hypochloremia, metabolic alkalosis and hyperreninemia with normal blood pressure except it presents later and produces hypocalciuria and hypomagnesemia.

The renal stones are usually uric acid stones due to hyperuricemia.

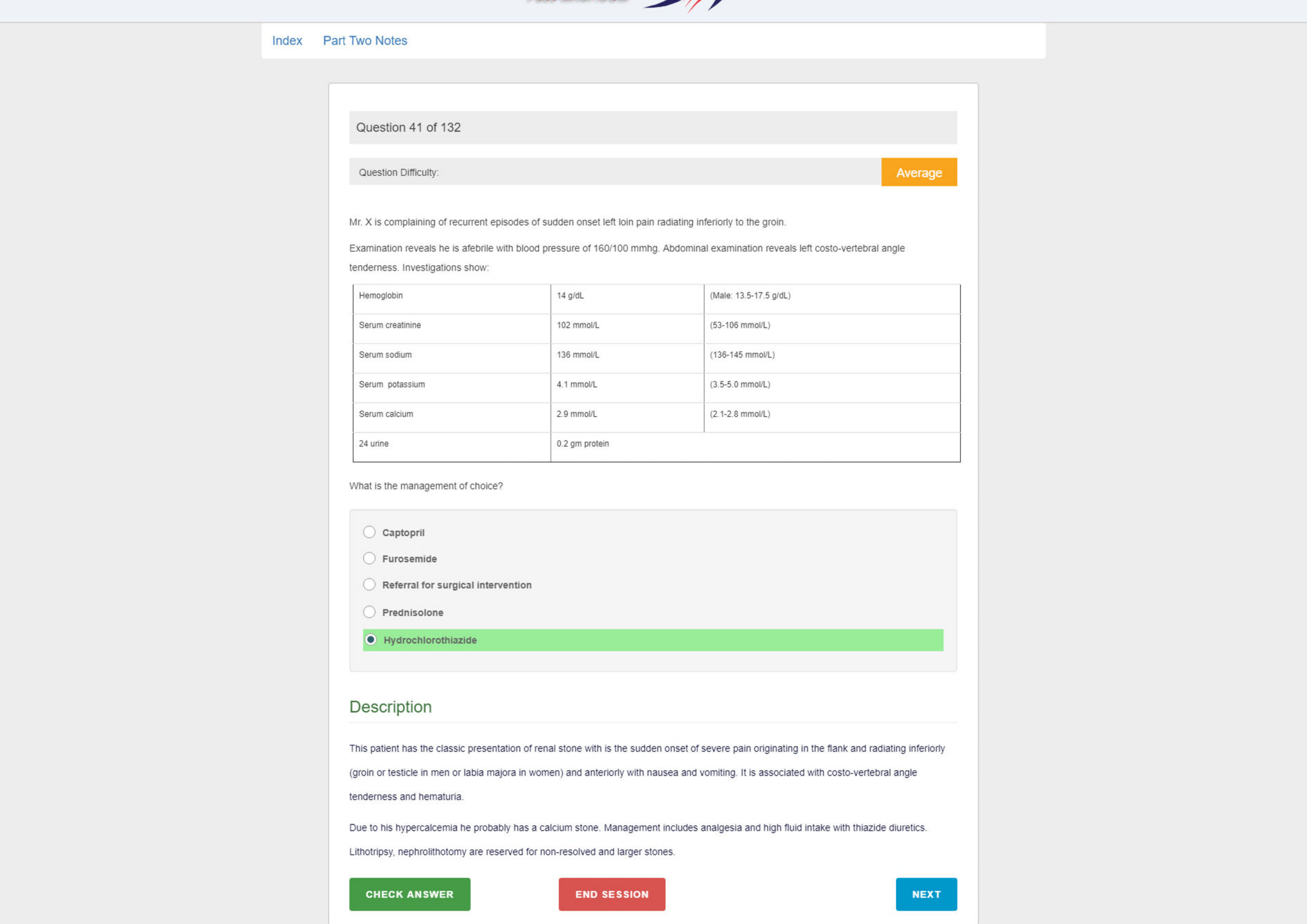
Liddle syndrome is manifested by hypertension and hypokalemic alkalosis with low renin and aldosterone levels.

Conn syndrome is manifested by hypertension and hypokalemic alkalosis with low renin and high aldosterone levels.

CHECK ANSWER END SESSION NEXT

Session Statistics

Answered: 39 ✓ **Correct**: 7 ✕ **Incorrect**: 32 **Average Score**: 17.95 %



Question 41 of 132

Question Difficulty: **Average**

Mr. X is complaining of recurrent episodes of sudden onset left loin pain radiating inferiorly to the groin.

Examination reveals he is afebrile with blood pressure of 160/100 mmhg. Abdominal examination reveals left costo-vertebral angle tenderness. Investigations show:

Hemoglobin	14 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	102 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.9 mmol/L	(2.1-2.8 mmol/L)
24 urine	0.2 gm protein	

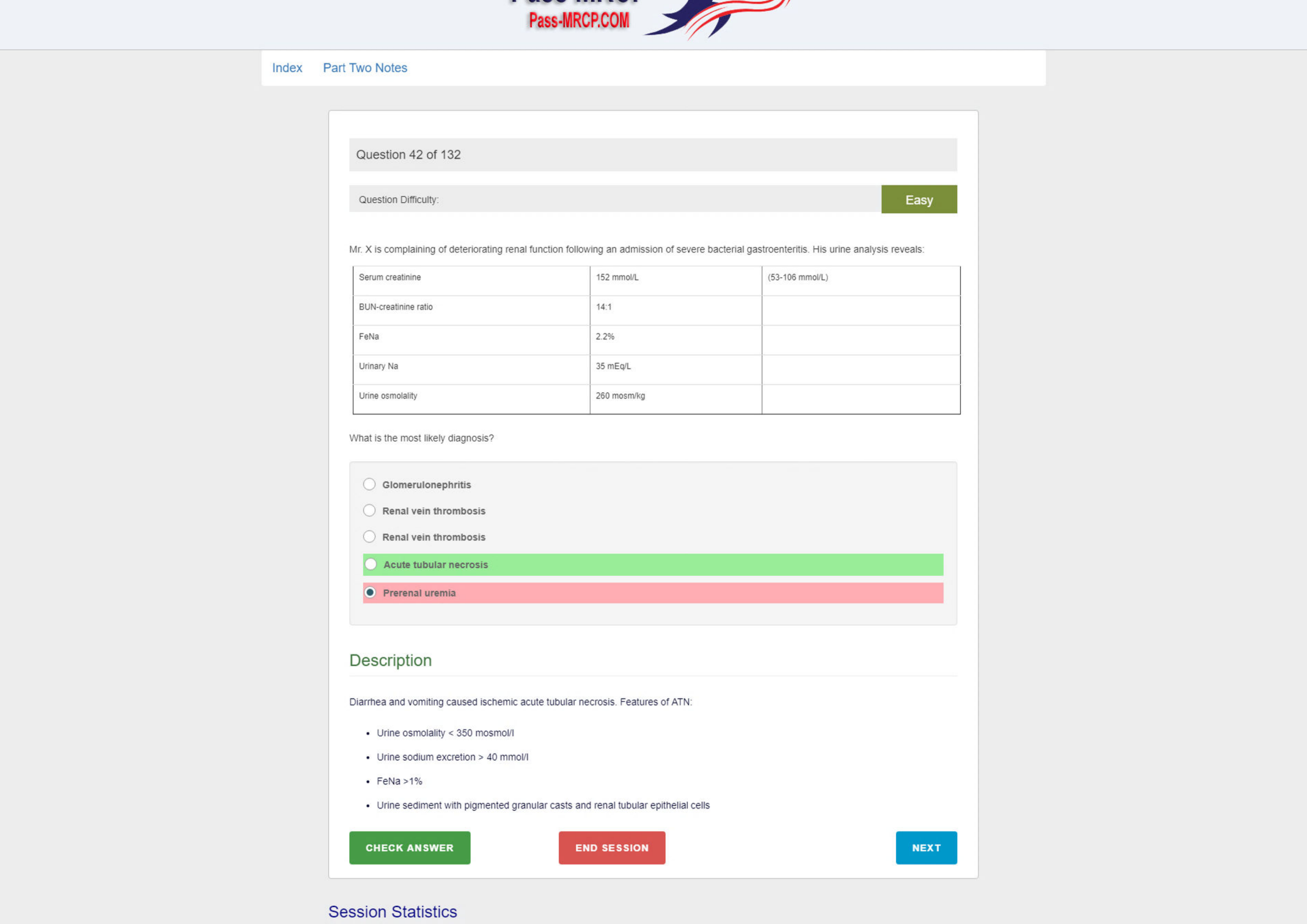
What is the management of choice?

- ○ **Captopril**
- ○ **Furosemide**
- ○ **Referral for surgical intervention**
- ○ **Prednisolone**
- ● **Hydrochlorothiazide**

Description

This patient has the classic presentation of renal stone with is the sudden onset of severe pain originating in the flank and radiating inferiorly (groin or testicle in men or labia majora in women) and anteriorly with nausea and vomiting. It is associated with costo-vertebral angle tenderness and hematuria.

Due to his hypercalcemia he probably has a calcium stone. Management includes analgesia and high fluid intake with thiazide diuretics. Lithotripsy, nephrolithotomy are reserved for non-resolved and larger stones.



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Question Difficulty: **Easy**

Mr. X is complaining of deteriorating renal function following an admission of severe bacterial gastroenteritis. His urine analysis reveals:

Serum creatinine	152 mmol/L	(53-106 mmol/L)
BUN-creatinine ratio	14:1	
FeNa	2.2%	
Urinary Na	35 mEq/L	
Urine osmolality	260 mosm/kg	

What is the most likely diagnosis?

○ **Glomerulonephritis**

○ **Renal vein thrombosis**

○ **Renal vein thrombosis**

○ **Acute tubular necrosis**

● **Prerenal uremia**

Description

Diarrhea and vomiting caused ischemic acute tubular necrosis. Features of ATN:

- Urine osmolality < 350 mosmol/l
- Urine sodium excretion > 40 mmol/l
- FeNa >1%
- Urine sediment with pigmented granular casts and renal tubular epithelial cells

CHECK ANSWER
END SESSION
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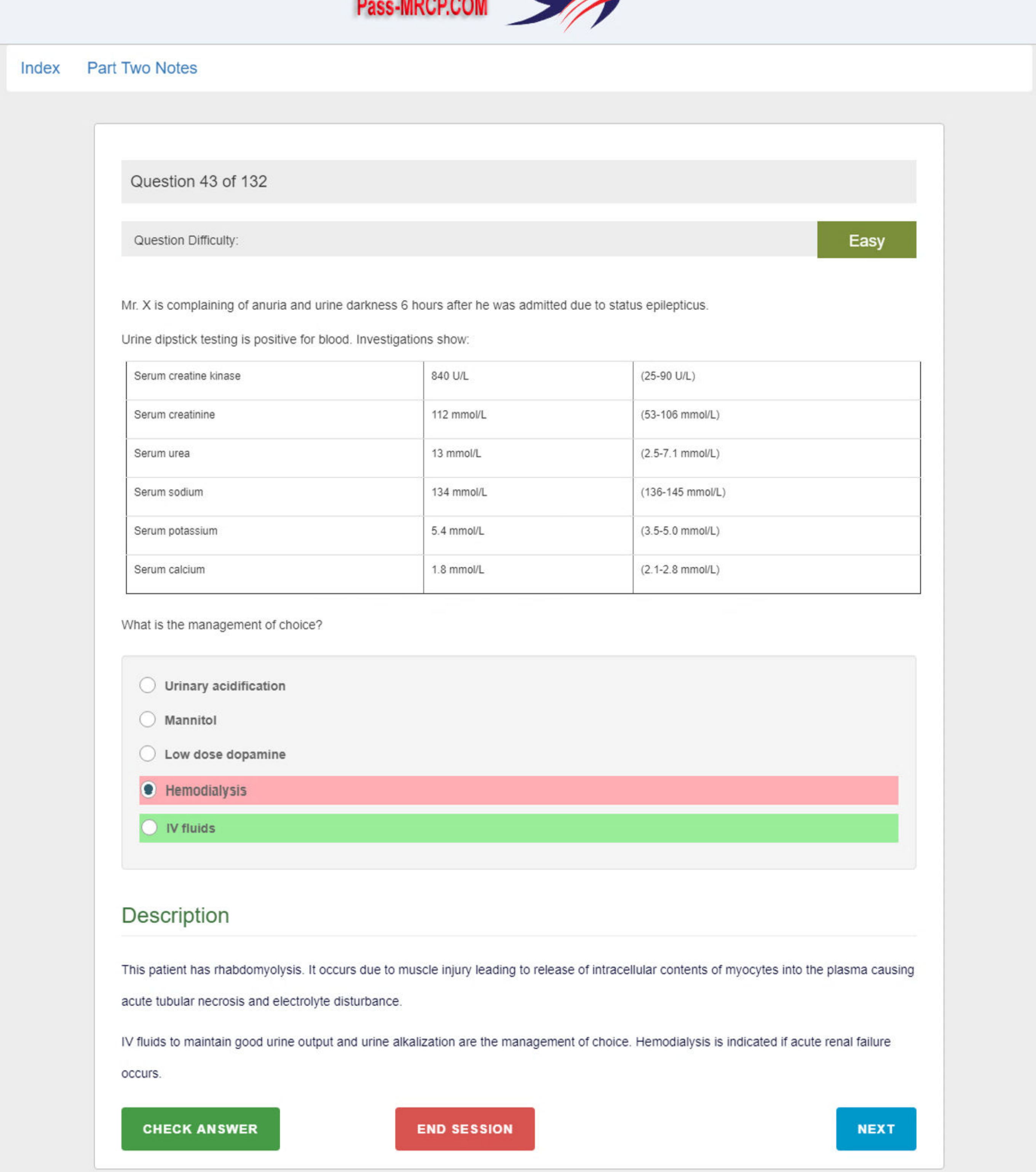
Session Statistics



Question 43 of 132

Question Difficulty: Easy

Mr. X is complaining of anuria and urine darkness 6 hours after he was admitted due to status epilepticus.

Urine dipstick testing is positive for blood. Investigations show:

Serum creatine kinase	840 U/L	(25-90 U/L)
Serum creatinine	112 mmol/L	(53-106 mmol/L)
Serum urea	13 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	134 mmol/L	(136-145 mmol/L)
Serum potassium	5.4 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.8 mmol/L	(2.1-2.8 mmol/L)

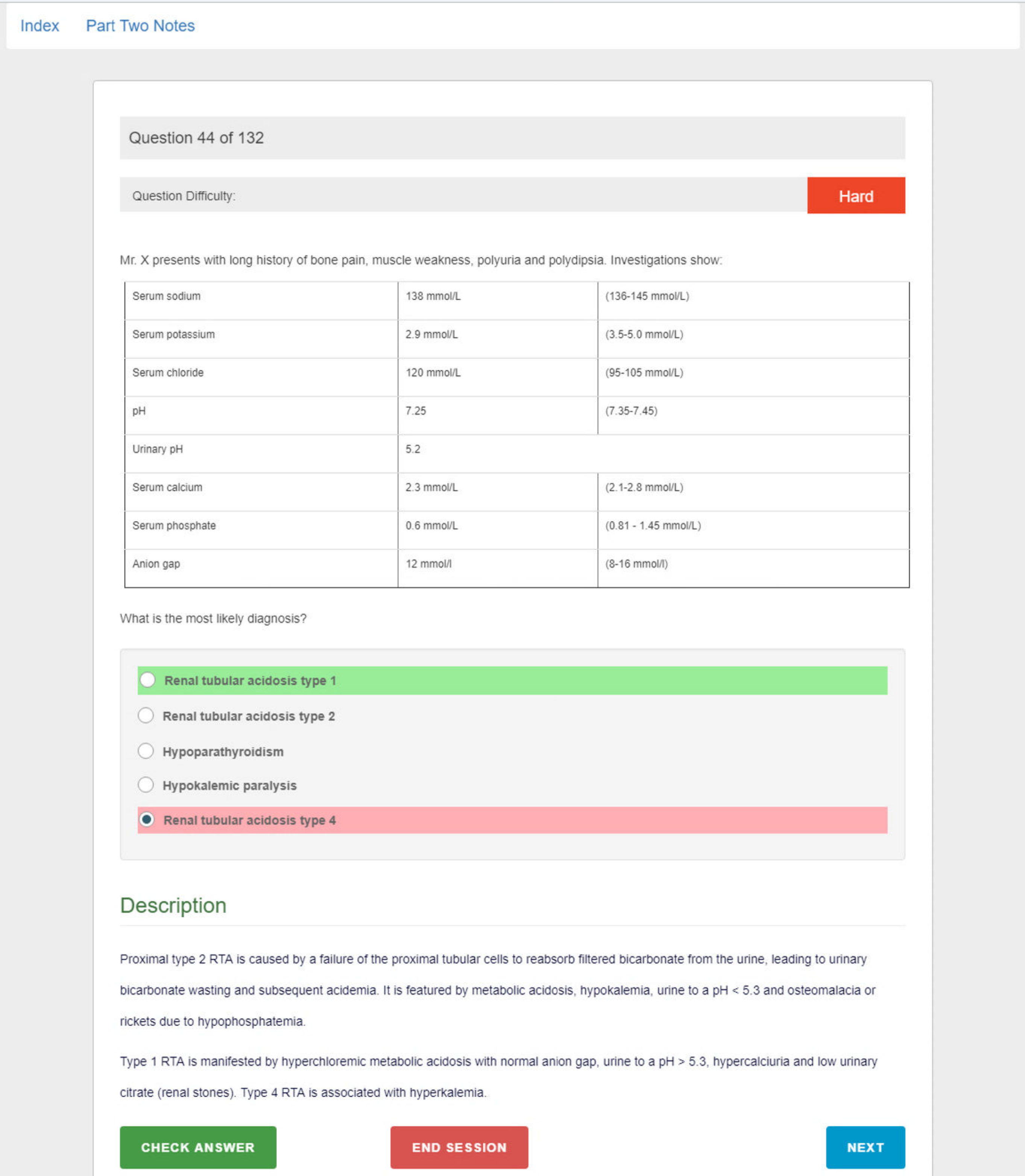
What is the management of choice?

- ○ **Urinary acidification**
- ○ **Mannitol**
- ○ **Low dose dopamine**
- ● **Hemodialysis**
- ○ **IV fluids**

Description

This patient has rhabdomyolysis. It occurs due to muscle injury leading to release of intracellular contents of myocytes into the plasma causing acute tubular necrosis and electrolyte disturbance.

IV fluids to maintain good urine output and urine alkalization are the management of choice. Hemodialysis is indicated if acute renal failure occurs.



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Mr. X presents with long history of bone pain, muscle weakness, polyuria and polydipsia. Investigations show:

Serum sodium	138 mmol/L	(136-145 mmol/L)
Serum potassium	2.9 mmol/L	(3.5-5.0 mmol/L)
Serum chloride	120 mmol/L	(95-105 mmol/L)
pH	7.25	(7.35-7.45)
Urinary pH	5.2	
Serum calcium	2.3 mmol/L	(2.1-2.8 mmol/L)
Serum phosphate	0.6 mmol/L	(0.81 - 1.45 mmol/L)
Anion gap	12 mmol/l	(8-16 mmol/l)

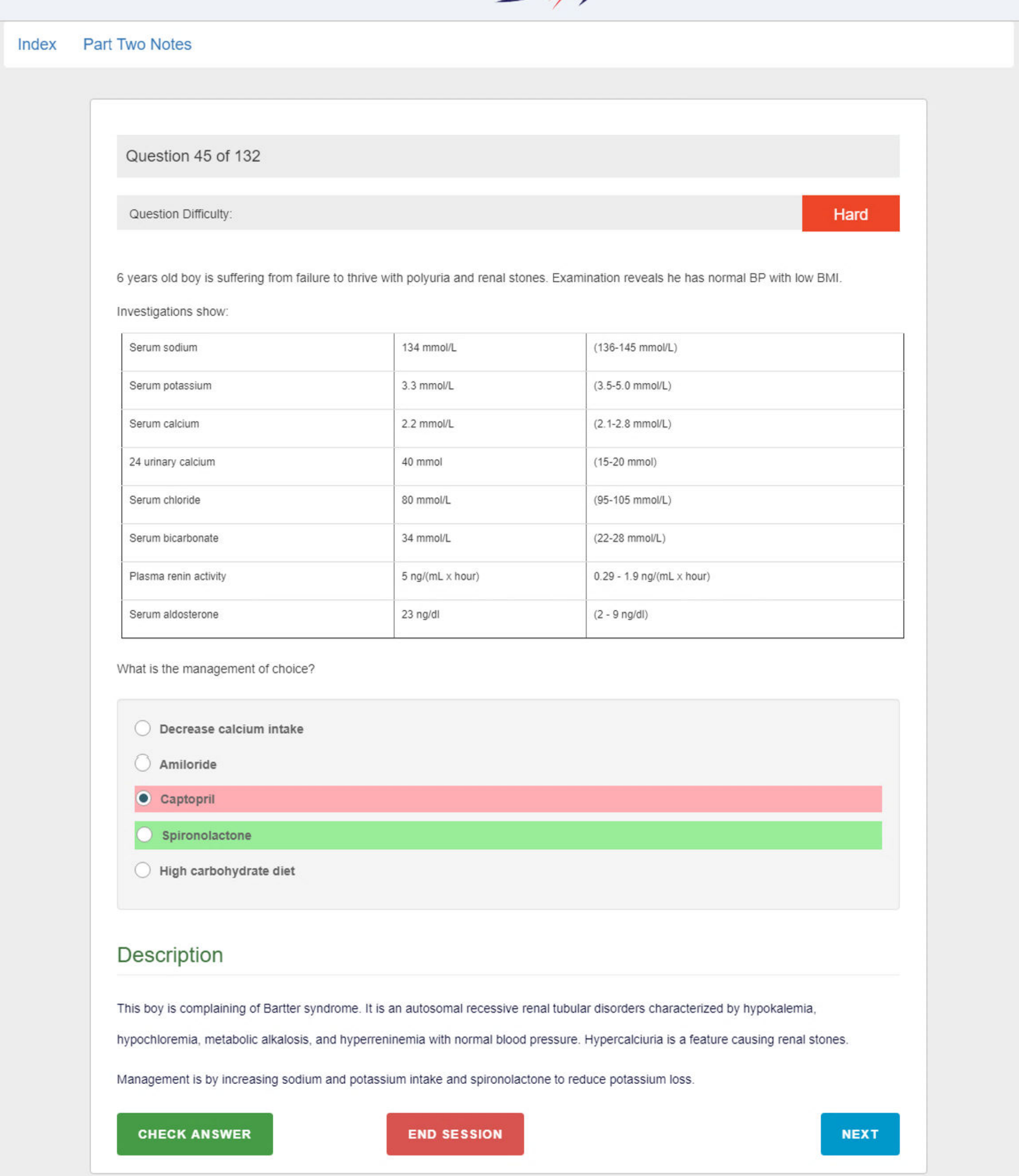
What is the most likely diagnosis?

- ○ **Renal tubular acidosis type 1**
- ○ **Renal tubular acidosis type 2**
- ○ **Hypoparathyroidism**
- ○ **Hypokalemic paralysis**
- ● **Renal tubular acidosis type 4**

Description

Proximal type 2 RTA is caused by a failure of the proximal tubular cells to reabsorb filtered bicarbonate from the urine, leading to urinary bicarbonate wasting and subsequent acidemia. It is featured by metabolic acidosis, hypokalemia, urine to a pH < 5.3 and osteomalacia or rickets due to hypophosphatemia.

Type 1 RTA is manifested by hyperchloremic metabolic acidosis with normal anion gap, urine to a pH > 5.3, hypercalciuria and low urinary citrate (renal stones). Type 4 RTA is associated with hyperkalemia.



Question 45 of 132

Question Difficulty: Hard

6 years old boy is suffering from failure to thrive with polyuria and renal stones. Examination reveals he has normal BP with low BMI.

Investigations show:

Serum sodium	134 mmol/L	(136-145 mmol/L)
Serum potassium	3.3 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.2 mmol/L	(2.1-2.8 mmol/L)
24 urinary calcium	40 mmol	(15-20 mmol)
Serum chloride	80 mmol/L	(95-105 mmol/L)
Serum bicarbonate	34 mmol/L	(22-28 mmol/L)
Plasma renin activity	5 ng/(mL x hour)	0.29 - 1.9 ng/(mL x hour)
Serum aldosterone	23 ng/dl	(2 - 9 ng/dl)

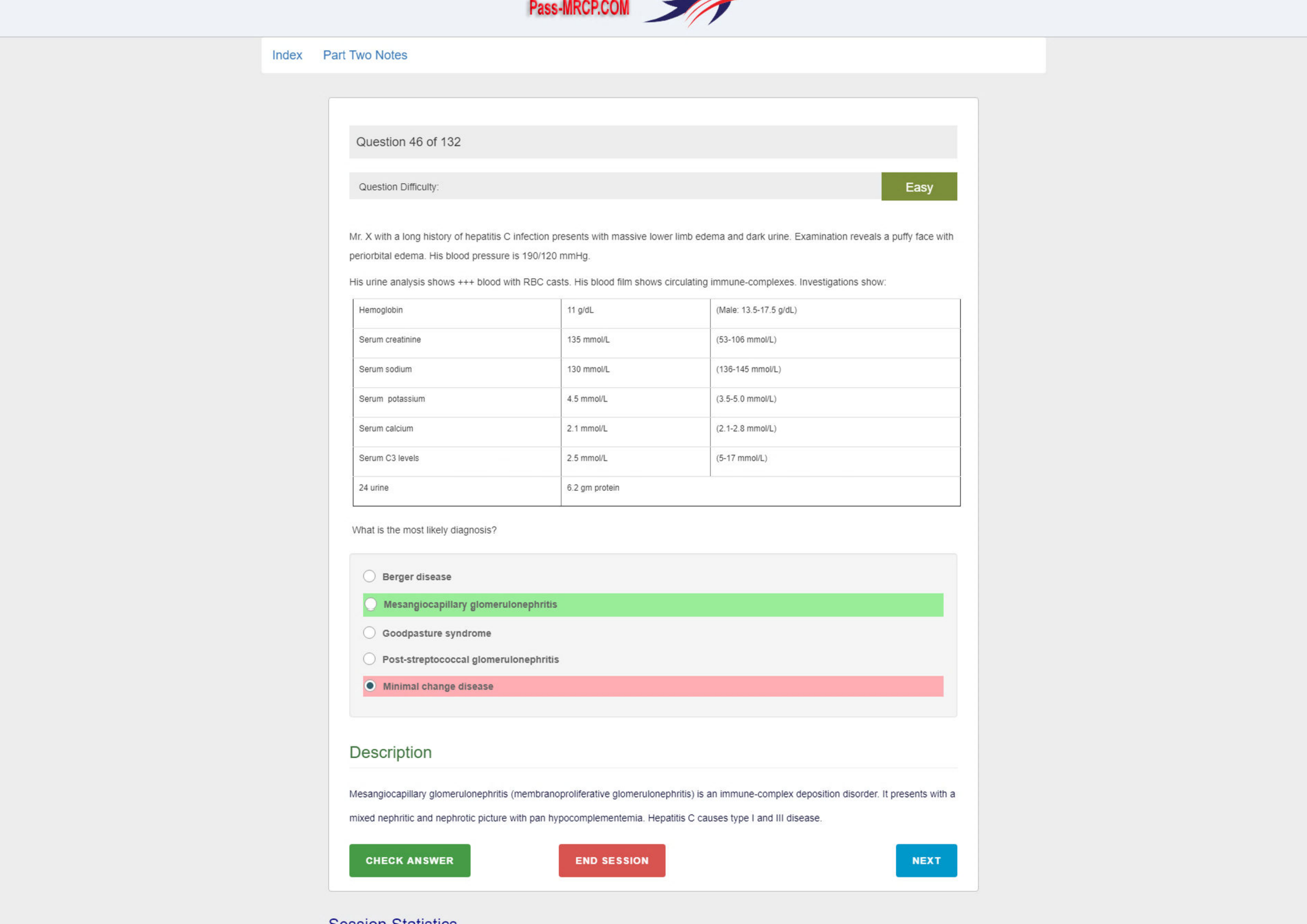
What is the management of choice?

- ○ **Decrease calcium intake**
- ○ **Amiloride**
- ● **Captopril**
- ○ **Spironolactone**
- ○ **High carbohydrate diet**

Description

This boy is complaining of Bartter syndrome. It is an autosomal recessive renal tubular disorders characterized by hypokalemia, hypochloremia, metabolic alkalosis, and hyperreninemia with normal blood pressure. Hypercalciuria is a feature causing renal stones.

Management is by increasing sodium and potassium intake and spironolactone to reduce potassium loss.



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Question Difficulty: **Easy**

Mr. X with a long history of hepatitis C infection presents with massive lower limb edema and dark urine. Examination reveals a puffy face with periorbital edema. His blood pressure is 190/120 mmHg.

His urine analysis shows +++ blood with RBC casts. His blood film shows circulating immune-complexes. Investigations show:

Hemoglobin	11 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	135 mmol/L	(53-106 mmol/L)
Serum sodium	130 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.1 mmol/L	(2.1-2.8 mmol/L)
Serum C3 levels	2.5 mmol/L	(5-17 mmol/L)
24 urine	6.2 gm protein	

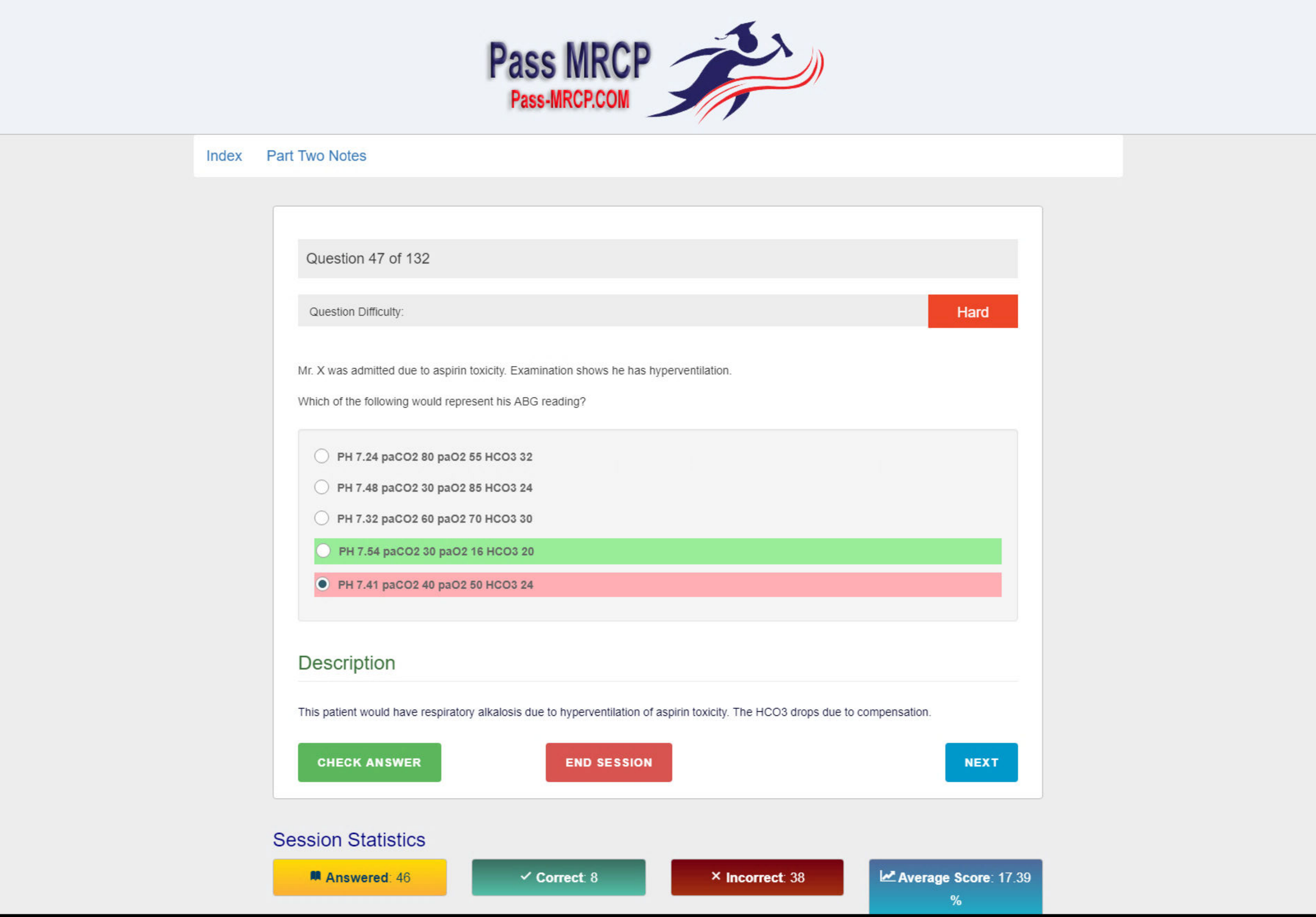
What is the most likely diagnosis?

- ○ **Berger disease**
- ○ **Mesangiocapillary glomerulonephritis**
- ○ **Goodpasture syndrome**
- ○ **Post-streptococcal glomerulonephritis**
- ● **Minimal change disease**

Description

Mesangiocapillary glomerulonephritis (membranoproliferative glomerulonephritis) is an immune-complex deposition disorder. It presents with a mixed nephritic and nephrotic picture with pan hypocomplementemia. Hepatitis C causes type I and III disease.

Session Statistics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Question Difficulty: Hard

Mr. X was admitted due to aspirin toxicity. Examination shows he has hyperventilation.

Which of the following would represent his ABG reading?

- ○ PH 7.24 paCO2 80 paO2 55 HCO3 32
- ○ PH 7.48 paCO2 30 paO2 85 HCO3 24
- ○ PH 7.32 paCO2 60 paO2 70 HCO3 30
- ○ PH 7.54 paCO2 30 paO2 16 HCO3 20
- ● PH 7.41 paCO2 40 paO2 50 HCO3 24

Description

This patient would have respiratory alkalosis due to hyperventilation of aspirin toxicity. The HCO3 drops due to compensation.

CHECK ANSWER
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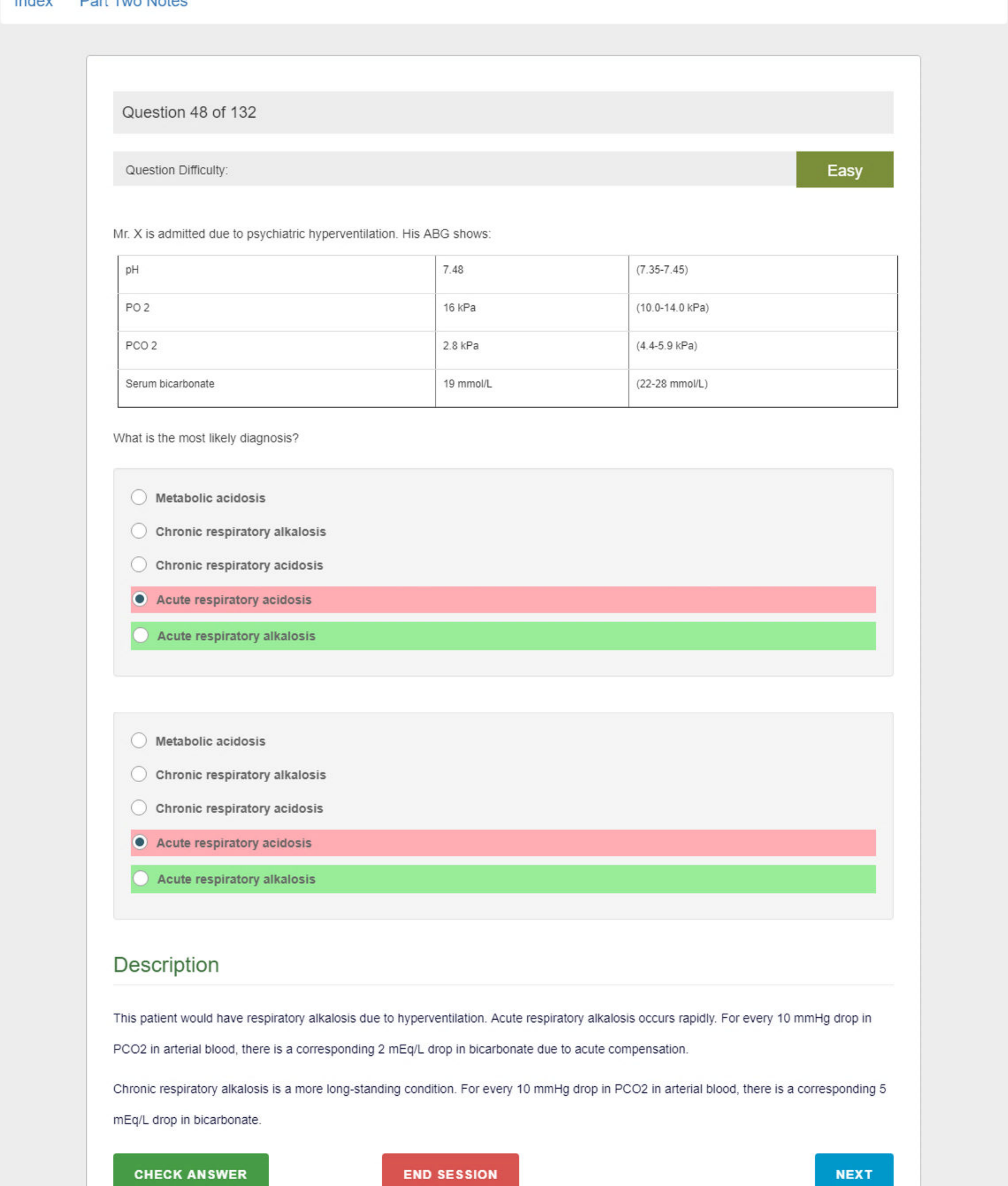
Session Statistics

Answered: 46
✓ Correct: 8
✕ Incorrect: 38
Average Score: 17.39 %



Question 48 of 132

Question Difficulty: Easy

Mr. X is admitted due to psychiatric hyperventilation. His ABG shows:

pH	7.48	(7.35-7.45)
PO 2	16 kPa	(10.0-14.0 kPa)
PCO 2	2.8 kPa	(4.4-5.9 kPa)
Serum bicarbonate	19 mmol/L	(22-28 mmol/L)

What is the most likely diagnosis?

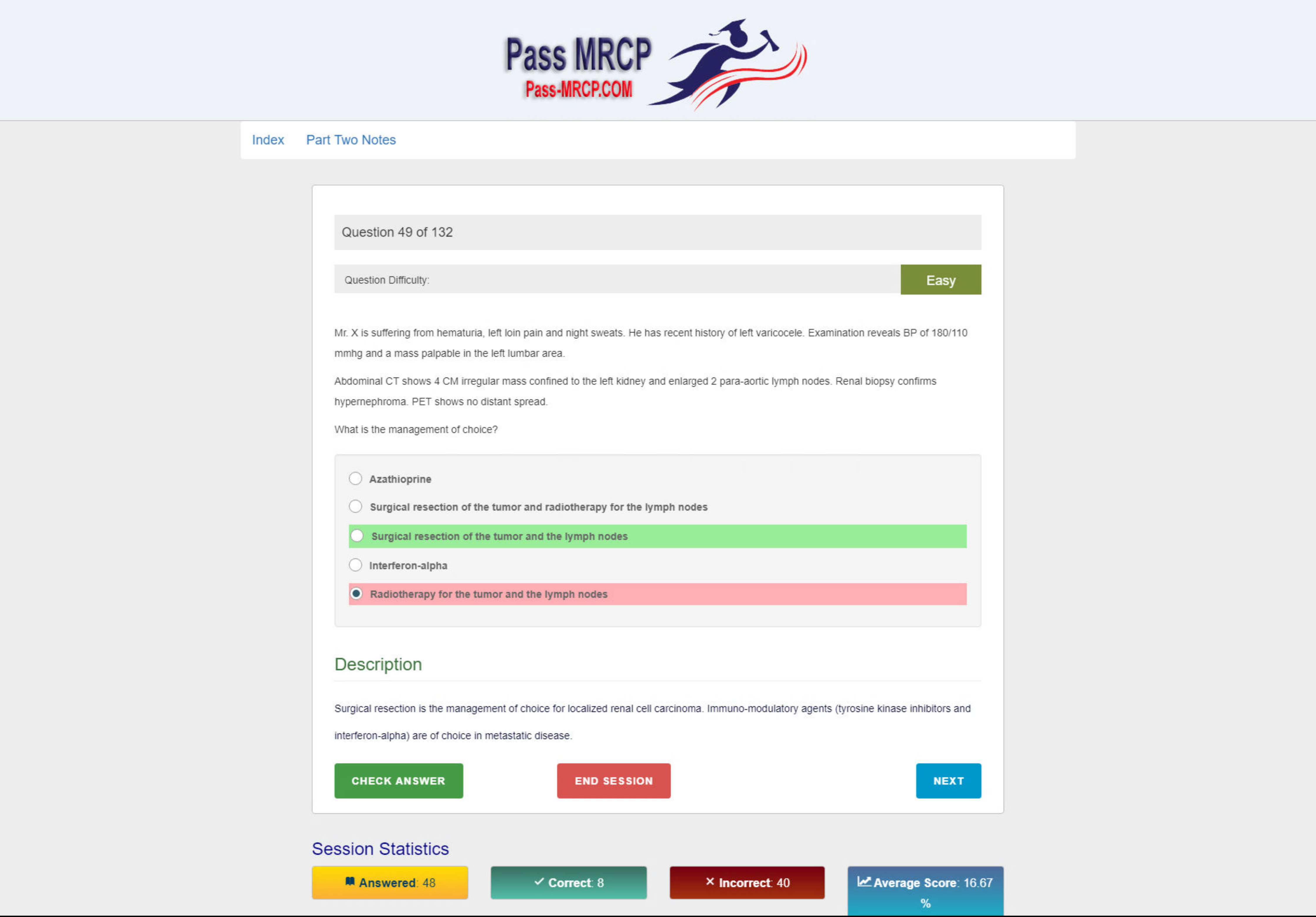
- ○ Metabolic acidosis
- ○ Chronic respiratory alkalosis
- ○ Chronic respiratory acidosis
- ● Acute respiratory acidosis
- ○ Acute respiratory alkalosis

- ○ Metabolic acidosis
- ○ Chronic respiratory alkalosis
- ○ Chronic respiratory acidosis
- ● Acute respiratory acidosis
- ○ Acute respiratory alkalosis

Description

This patient would have respiratory alkalosis due to hyperventilation. Acute respiratory alkalosis occurs rapidly. For every 10 mmHg drop in PCO2 in arterial blood, there is a corresponding 2 mEq/L drop in bicarbonate due to acute compensation.

Chronic respiratory alkalosis is a more long-standing condition. For every 10 mmHg drop in PCO2 in arterial blood, there is a corresponding 5 mEq/L drop in bicarbonate.



Question 49 of 132

Question Difficulty: **Easy**

Mr. X is suffering from hematuria, left loin pain and night sweats. He has recent history of left varicocele. Examination reveals BP of 180/110 mmhg and a mass palpable in the left lumbar area.

Abdominal CT shows 4 CM irregular mass confined to the left kidney and enlarged 2 para-aortic lymph nodes. Renal biopsy confirms hypernephroma. PET shows no distant spread.

What is the management of choice?

- ○ **Azathioprine**
- ○ **Surgical resection of the tumor and radiotherapy for the lymph nodes**
- ○ **Surgical resection of the tumor and the lymph nodes** 🟩
- ○ **Interferon-alpha**
- ● **Radiotherapy for the tumor and the lymph nodes** 🟥

Description

Surgical resection is the management of choice for localized renal cell carcinoma. Immuno-modulatory agents (tyrosine kinase inhibitors and interferon-alpha) are of choice in metastatic disease.

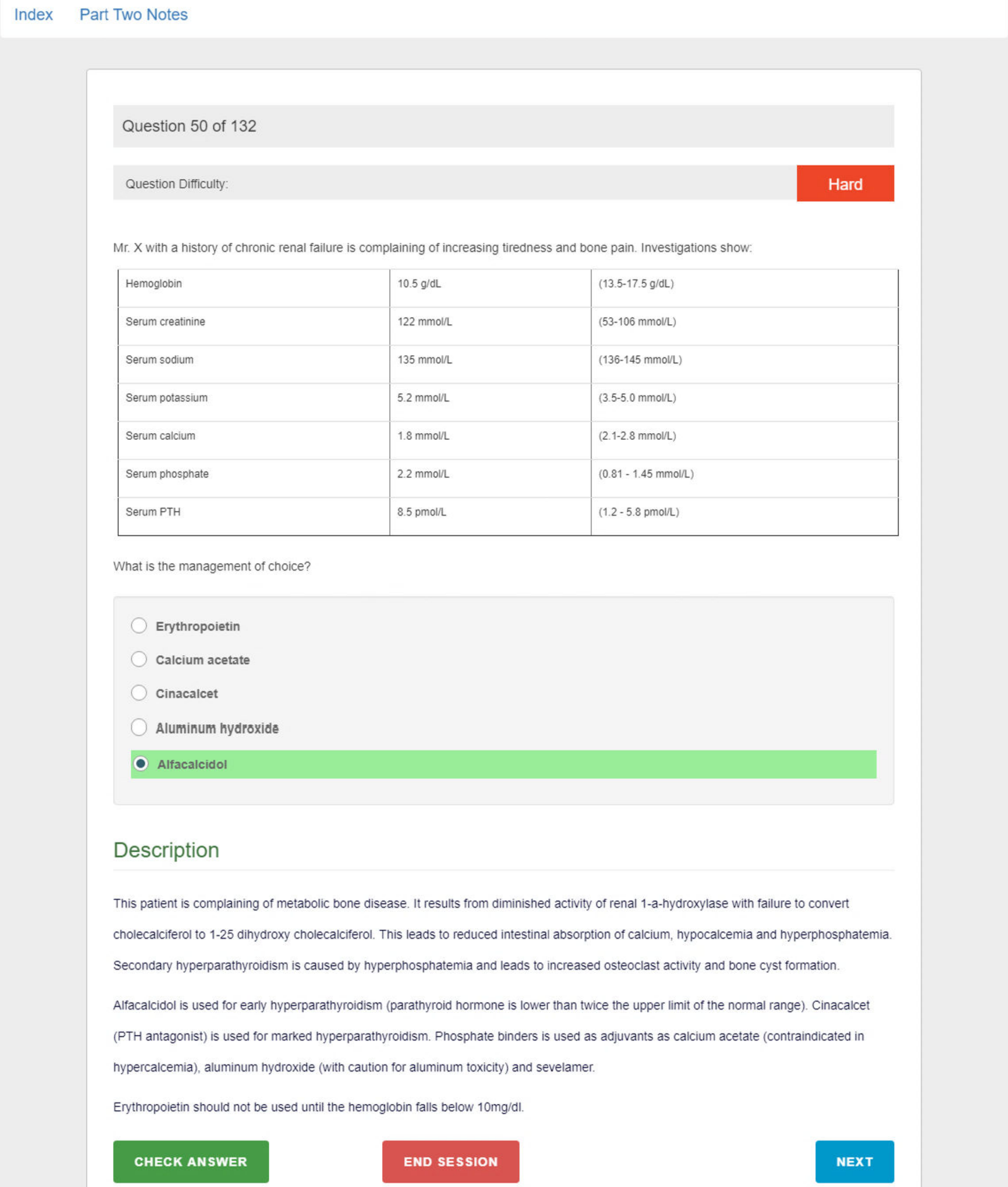
Session Statistics

Answered: 48

✓ **Correct**: 8

× **Incorrect**: 40

Average Score: 16.67 %



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Mr. X with a history of chronic renal failure is complaining of increasing tiredness and bone pain. Investigations show:

Hemoglobin	10.5 g/dL	(13.5-17.5 g/dL)
Serum creatinine	122 mmol/L	(53-106 mmol/L)
Serum sodium	135 mmol/L	(136-145 mmol/L)
Serum potassium	5.2 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.8 mmol/L	(2.1-2.8 mmol/L)
Serum phosphate	2.2 mmol/L	(0.81 - 1.45 mmol/L)
Serum PTH	8.5 pmol/L	(1.2 - 5.8 pmol/L)

What is the management of choice?

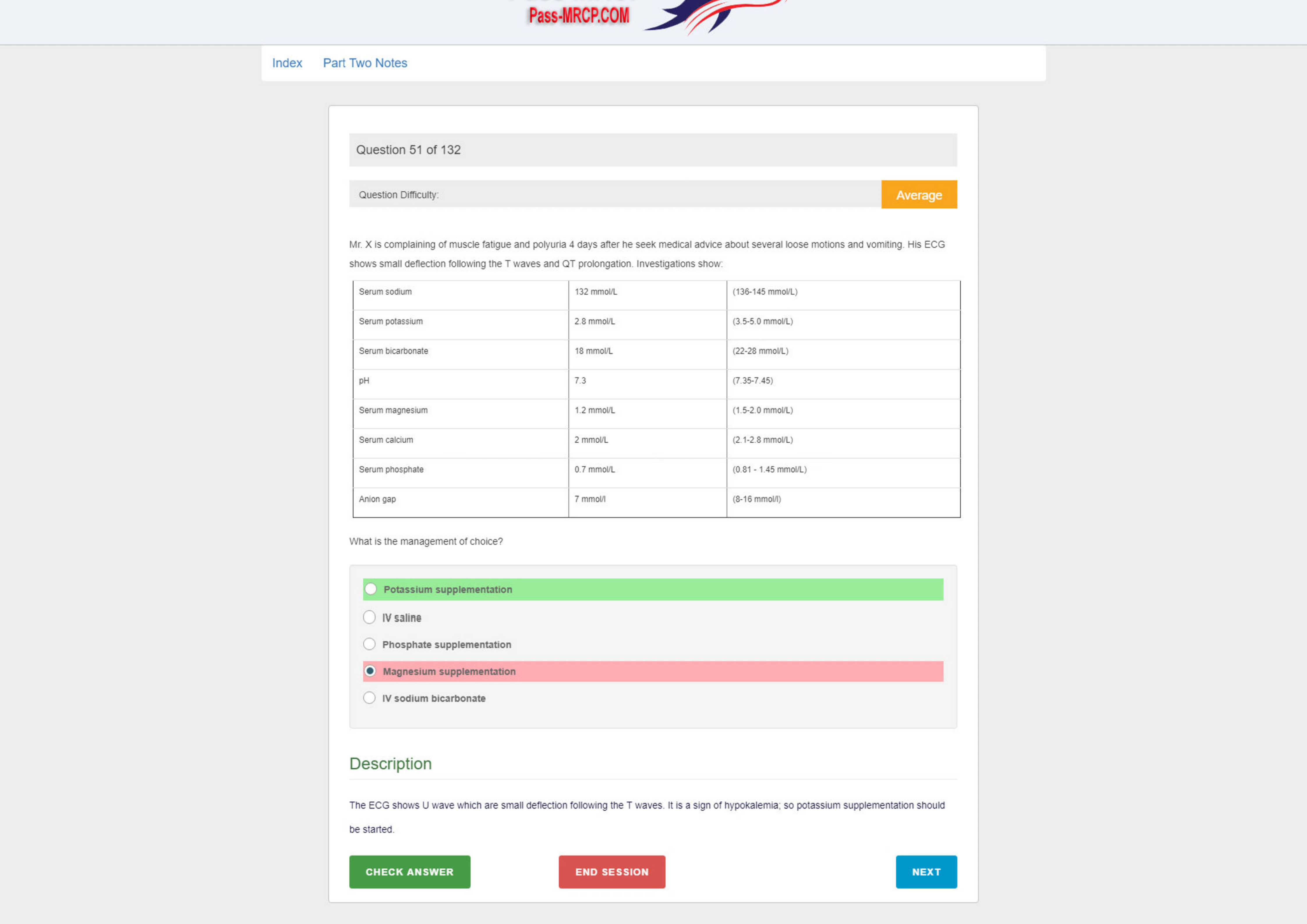
○ **Erythropoietin**
○ **Calcium acetate**
○ **Cinacalcet**
○ **Aluminum hydroxide**
● **Alfacalcidol**

Description

This patient is complaining of metabolic bone disease. It results from diminished activity of renal 1-a-hydroxylase with failure to convert cholecalciferol to 1-25 dihydroxy cholecalciferol. This leads to reduced intestinal absorption of calcium, hypocalcemia and hyperphosphatemia. Secondary hyperparathyroidism is caused by hyperphosphatemia and leads to increased osteoclast activity and bone cyst formation.

Alfacalcidol is used for early hyperparathyroidism (parathyroid hormone is lower than twice the upper limit of the normal range). Cinacalcet (PTH antagonist) is used for marked hyperparathyroidism. Phosphate binders is used as adjuvants as calcium acetate (contraindicated in hypercalcemia), aluminum hydroxide (with caution for aluminum toxicity) and sevelamer.

Erythropoietin should not be used until the hemoglobin falls below 10mg/dl.



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Question Difficulty: **Average**

Mr. X is complaining of muscle fatigue and polyuria 4 days after he seek medical advice about several loose motions and vomiting. His ECG shows small deflection following the T waves and QT prolongation. Investigations show:

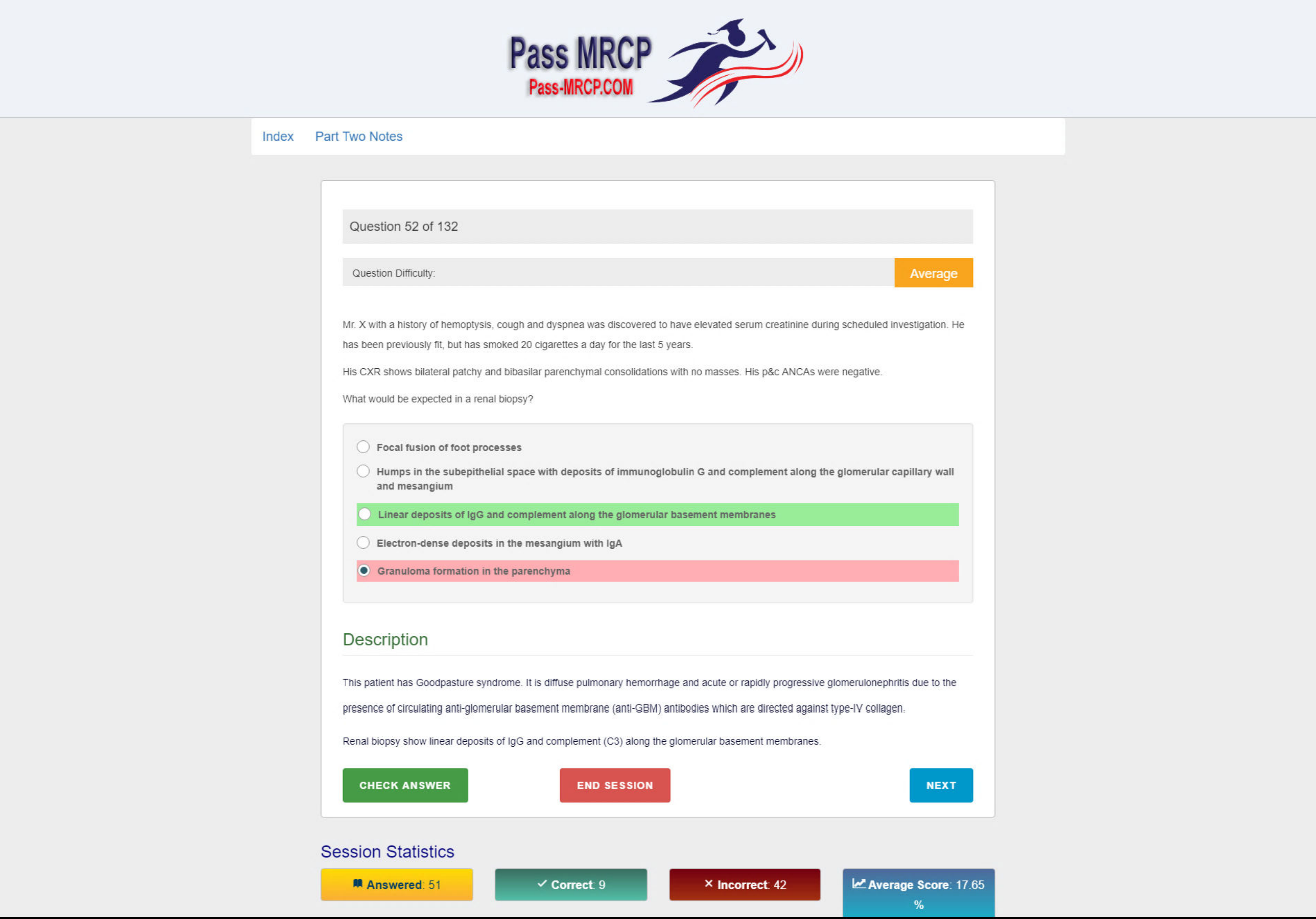
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	2.8 mmol/L	(3.5-5.0 mmol/L)
Serum bicarbonate	18 mmol/L	(22-28 mmol/L)
pH	7.3	(7.35-7.45)
Serum magnesium	1.2 mmol/L	(1.5-2.0 mmol/L)
Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
Serum phosphate	0.7 mmol/L	(0.81 - 1.45 mmol/L)
Anion gap	7 mmol/l	(8-16 mmol/l)

What is the management of choice?

- ○ **Potassium supplementation**
- ○ **IV saline**
- ○ **Phosphate supplementation**
- ● **Magnesium supplementation**
- ○ **IV sodium bicarbonate**

Description

The ECG shows U wave which are small deflection following the T waves. It is a sign of hypokalemia; so potassium supplementation should be started.



Question 52 of 132

Question Difficulty: Average

Mr. X with a history of hemoptysis, cough and dyspnea was discovered to have elevated serum creatinine during scheduled investigation. He has been previously fit, but has smoked 20 cigarettes a day for the last 5 years.

His CXR shows bilateral patchy and bibasilar parenchymal consolidations with no masses. His p&c ANCAs were negative.

What would be expected in a renal biopsy?

○ **Focal fusion of foot processes**
○ **Humps in the subepithelial space with deposits of immunoglobulin G and complement along the glomerular capillary wall and mesangium**
○ **Linear deposits of IgG and complement along the glomerular basement membranes**
○ **Electron-dense deposits in the mesangium with IgA**
● **Granuloma formation in the parenchyma**

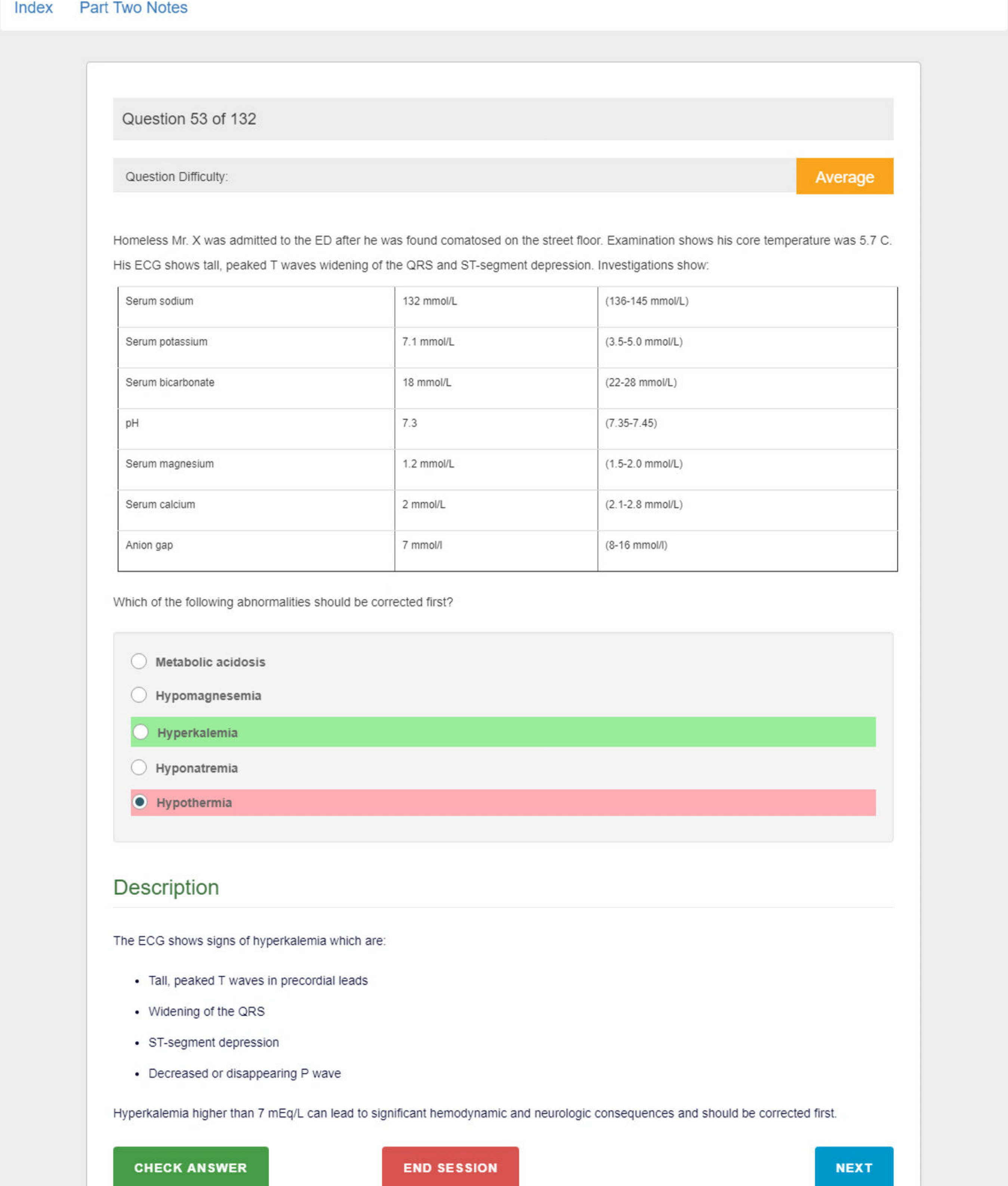
Description

This patient has Goodpasture syndrome. It is diffuse pulmonary hemorrhage and acute or rapidly progressive glomerulonephritis due to the presence of circulating anti-glomerular basement membrane (anti-GBM) antibodies which are directed against type-IV collagen.

Renal biopsy show linear deposits of IgG and complement (C3) along the glomerular basement membranes.

Session Statistics

Answered: 51
✓ Correct: 9
✕ Incorrect: 42
Average Score: 17.65 %



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Question Difficulty: **Average**

Homeless Mr. X was admitted to the ED after he was found comatosed on the street floor. Examination shows his core temperature was 5.7 C. His ECG shows tall, peaked T waves widening of the QRS and ST-segment depression. Investigations show:

Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	7.1 mmol/L	(3.5-5.0 mmol/L)
Serum bicarbonate	18 mmol/L	(22-28 mmol/L)
pH	7.3	(7.35-7.45)
Serum magnesium	1.2 mmol/L	(1.5-2.0 mmol/L)
Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
Anion gap	7 mmol/l	(8-16 mmol/l)

Which of the following abnormalities should be corrected first?

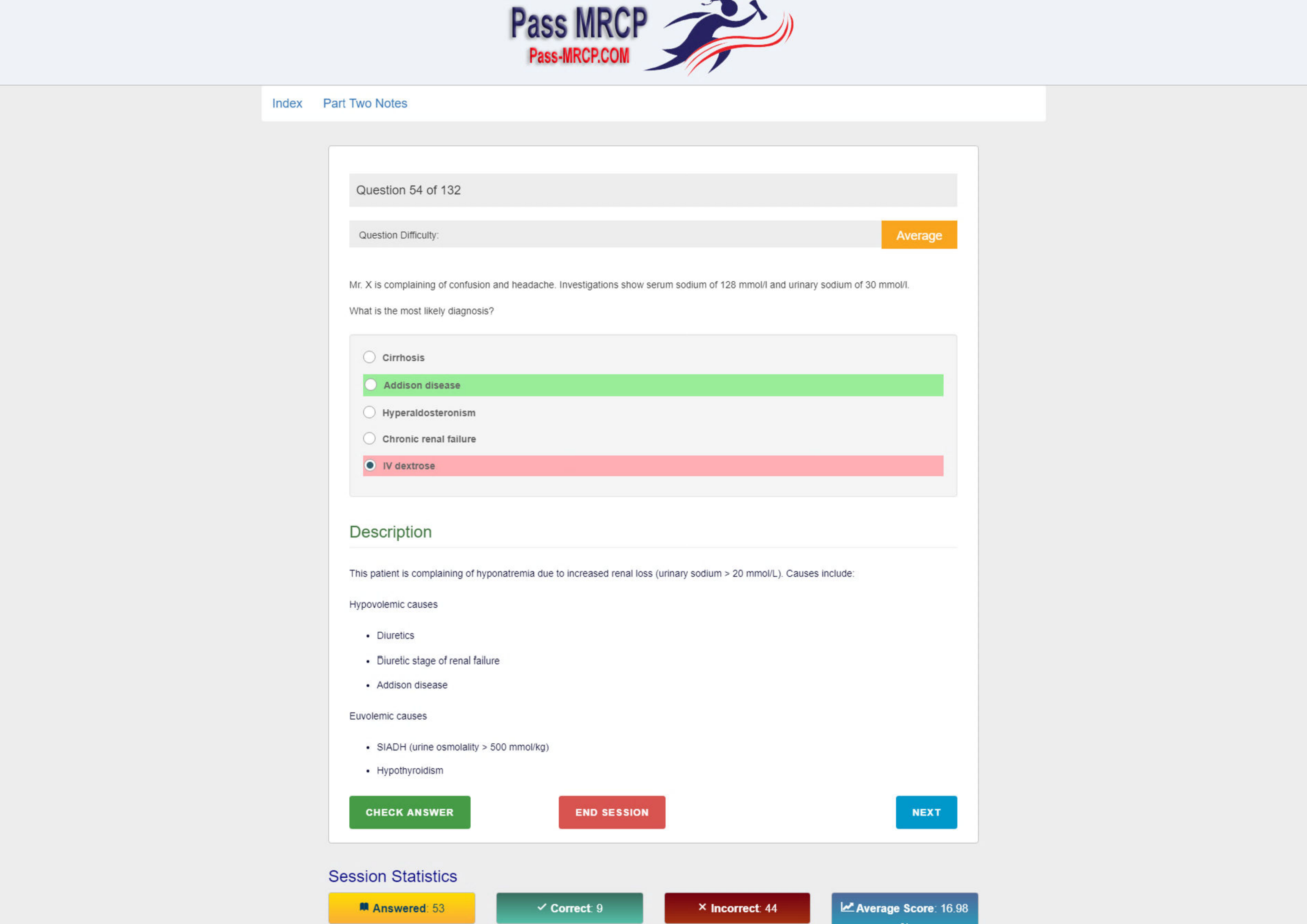
○ **Metabolic acidosis**
○ **Hypomagnesemia**
○ **Hyperkalemia** 🟩
○ **Hyponatremia**
● **Hypothermia** 🟥

Description

The ECG shows signs of hyperkalemia which are:

- Tall, peaked T waves in precordial leads
- Widening of the QRS
- ST-segment depression
- Decreased or disappearing P wave

Hyperkalemia higher than 7 mEq/L can lead to significant hemodynamic and neurologic consequences and should be corrected first.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Question Difficulty: Average

Mr. X is complaining of confusion and headache. Investigations show serum sodium of 128 mmol/l and urinary sodium of 30 mmol/l.

What is the most likely diagnosis?

○ Cirrhosis
○ Addison disease
○ Hyperaldosteronism
○ Chronic renal failure
● IV dextrose

Description

This patient is complaining of hyponatremia due to increased renal loss (urinary sodium > 20 mmol/L). Causes include:

Hypovolemic causes

- Diuretics
- Diuretic stage of renal failure
- Addison disease

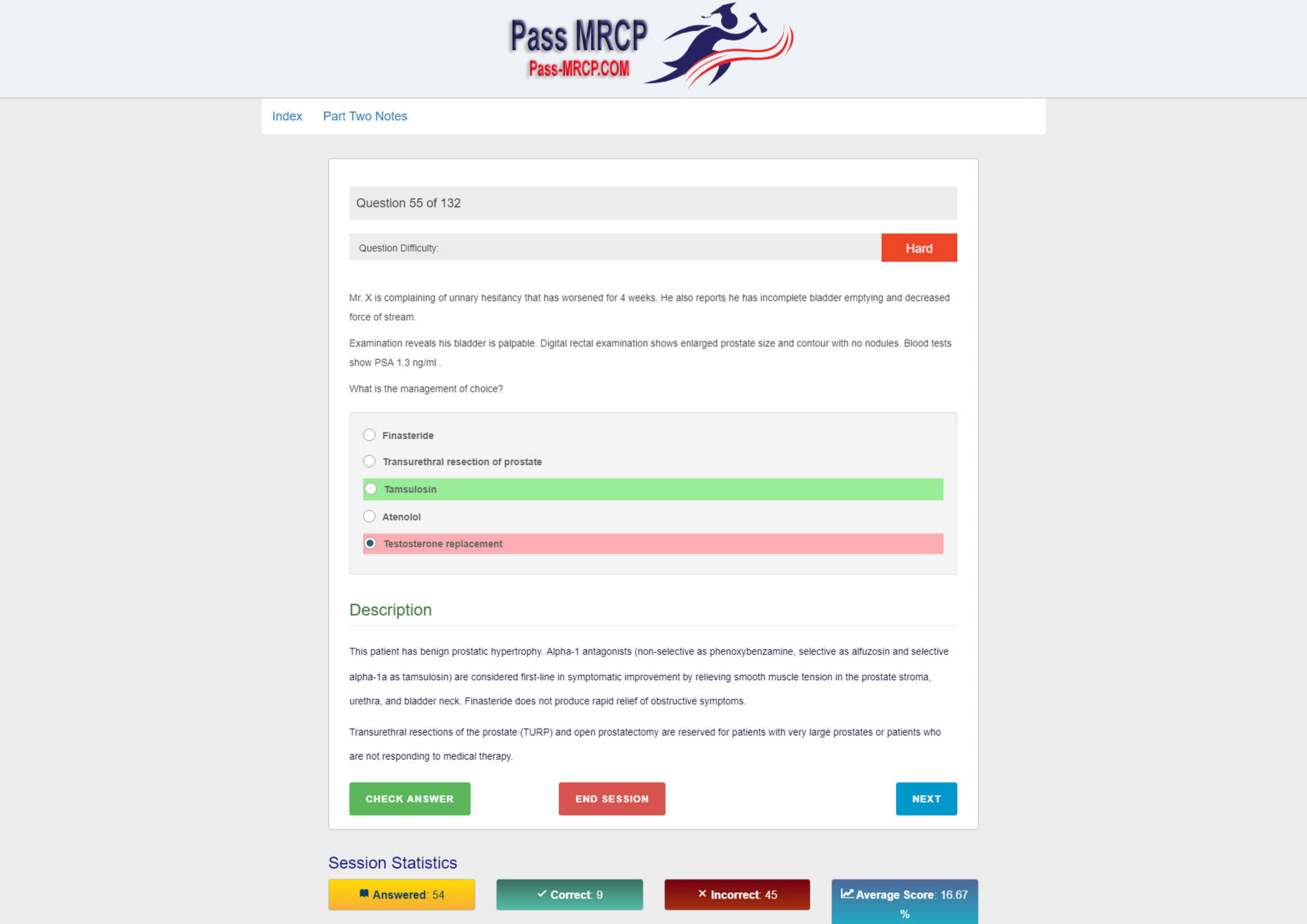
Euvolemic causes

- SIADH (urine osmolality > 500 mmol/kg)
- Hypothyroidism

CHECK ANSWER
END SESSION
NEXT

Session Statistics

Answered: 53
✓ Correct: 9
✕ Incorrect: 44
Average Score: 16.98



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Question Difficulty: Hard

Mr. X is complaining of urinary hesitancy that has worsened for 4 weeks. He also reports he has incomplete bladder emptying and decreased force of stream.

Examination reveals his bladder is palpable. Digital rectal examination shows enlarged prostate size and contour with no nodules. Blood tests show PSA 1.3 ng/ml .

What is the management of choice?

- ○ **Finasteride**
- ○ **Transurethral resection of prostate**
- ○ **Tamsulosin** 🟩
- ○ **Atenolol**
- ● **Testosterone replacement** 🟥

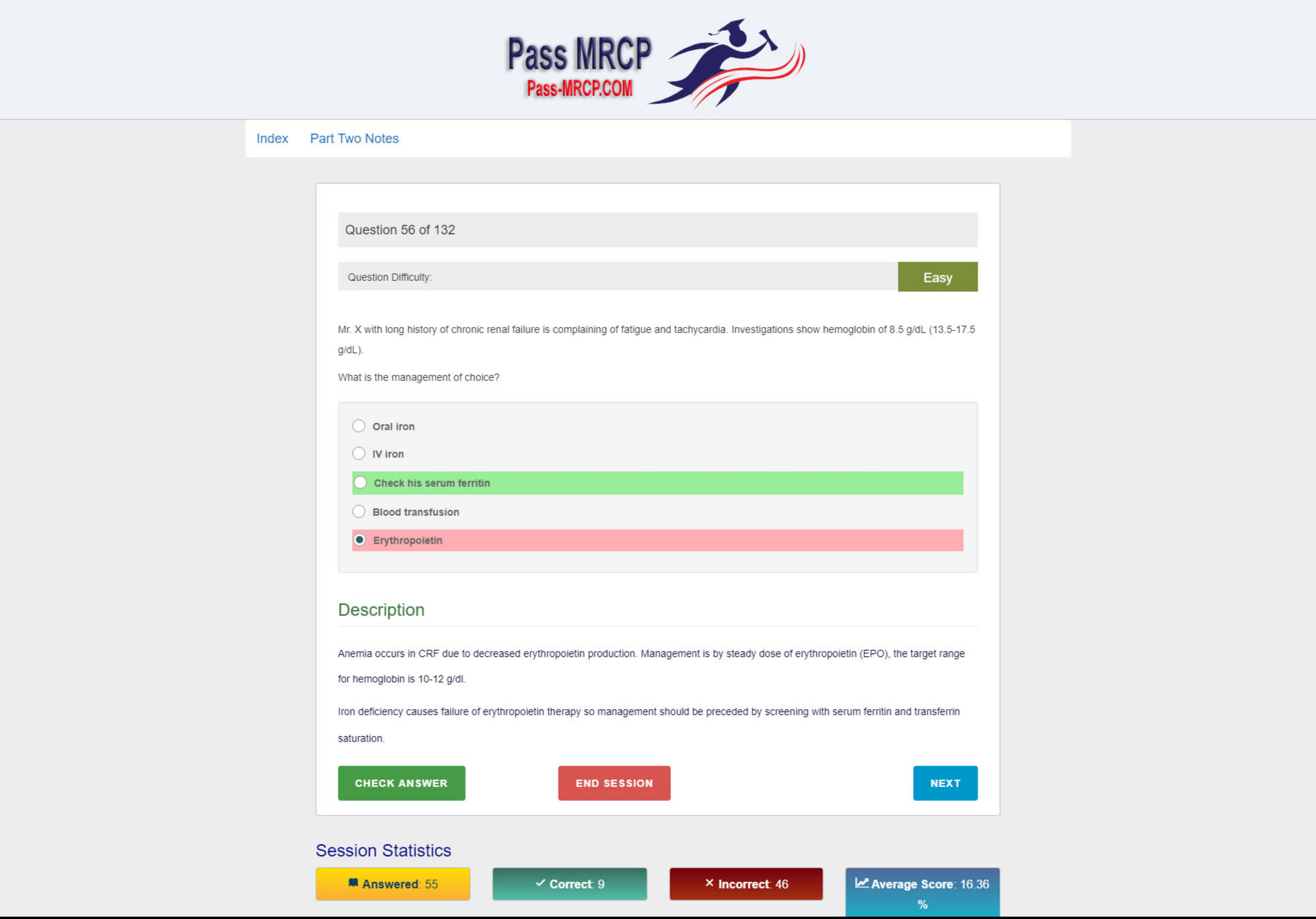
Description

This patient has benign prostatic hypertrophy. Alpha-1 antagonists (non-selective as phenoxybenzamine, selective as alfuzosin and selective alpha-1a as tamsulosin) are considered first-line in symptomatic improvement by relieving smooth muscle tension in the prostate stroma, urethra, and bladder neck. Finasteride does not produce rapid relief of obstructive symptoms.

Transurethral resections of the prostate (TURP) and open prostatectomy are reserved for patients with very large prostates or patients who are not responding to medical therapy.

Session Statistics

Answered: 54
✓ **Correct**: 9
✕ **Incorrect**: 45
Average Score: 16.67 %



Question 56 of 132

Question Difficulty: Easy

Mr. X with long history of chronic renal failure is complaining of fatigue and tachycardia. Investigations show hemoglobin of 8.5 g/dL (13.5-17.5 g/dL).

What is the management of choice?

○ Oral iron
○ IV iron
○ Check his serum ferritin
○ Blood transfusion
● Erythropoietin

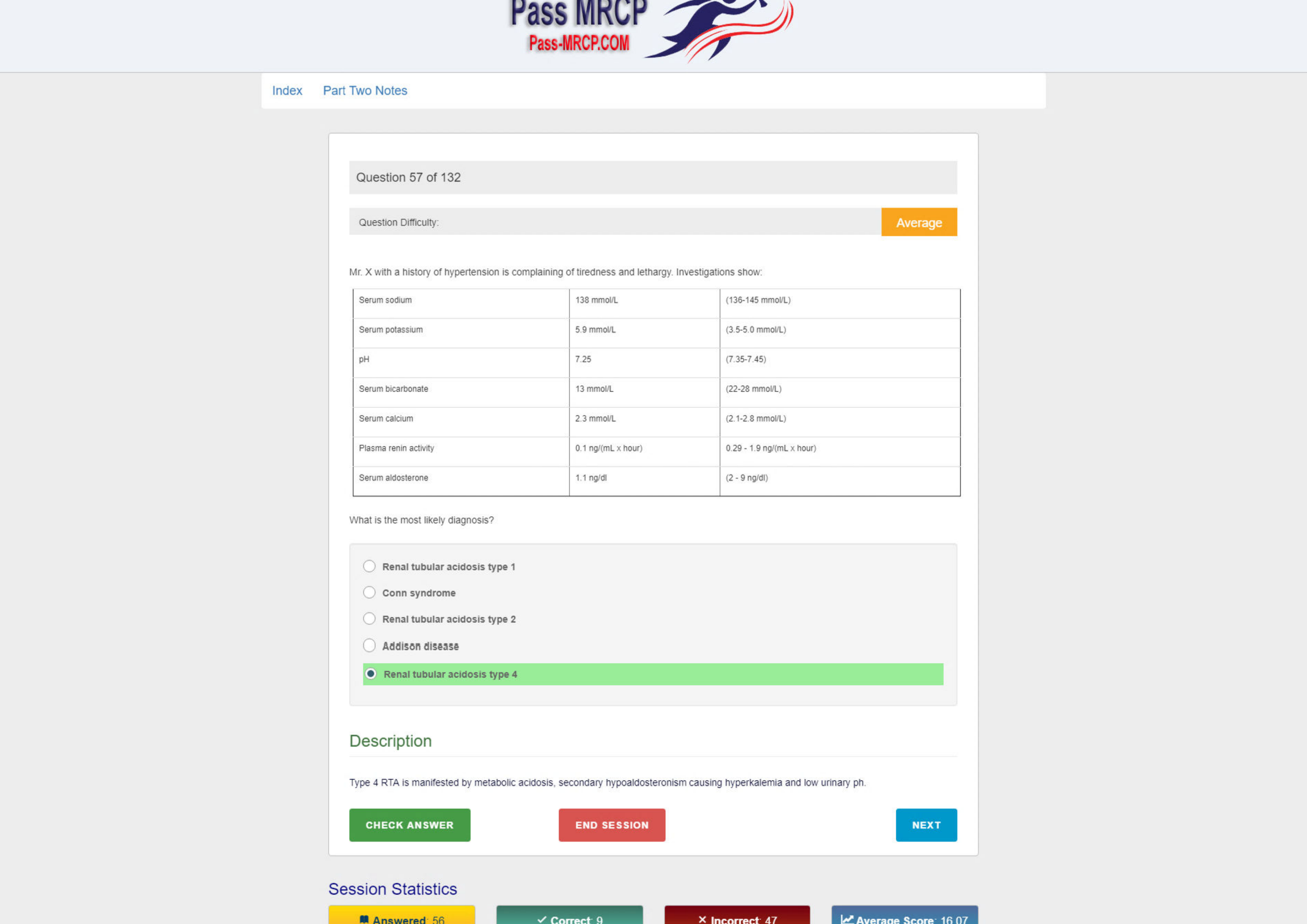
Description

Anemia occurs in CRF due to decreased erythropoietin production. Management is by steady dose of erythropoietin (EPO), the target range for hemoglobin is 10-12 g/dl.

Iron deficiency causes failure of erythropoietin therapy so management should be preceded by screening with serum ferritin and transferrin saturation.

Session Statistics

Answered: 55
✓ Correct: 9
✕ Incorrect: 46
Average Score: 16.36 %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Question Difficulty: Average

Mr. X with a history of hypertension is complaining of tiredness and lethargy. Investigations show:

Serum sodium	138 mmol/L	(136-145 mmol/L)
Serum potassium	5.9 mmol/L	(3.5-5.0 mmol/L)
pH	7.25	(7.35-7.45)
Serum bicarbonate	13 mmol/L	(22-28 mmol/L)
Serum calcium	2.3 mmol/L	(2.1-2.8 mmol/L)
Plasma renin activity	0.1 ng/(mL x hour)	0.29 - 1.9 ng/(mL x hour)
Serum aldosterone	1.1 ng/dl	(2 - 9 ng/dl)

What is the most likely diagnosis?

○ Renal tubular acidosis type 1
○ Conn syndrome
○ Renal tubular acidosis type 2
○ Addison disease
● Renal tubular acidosis type 4

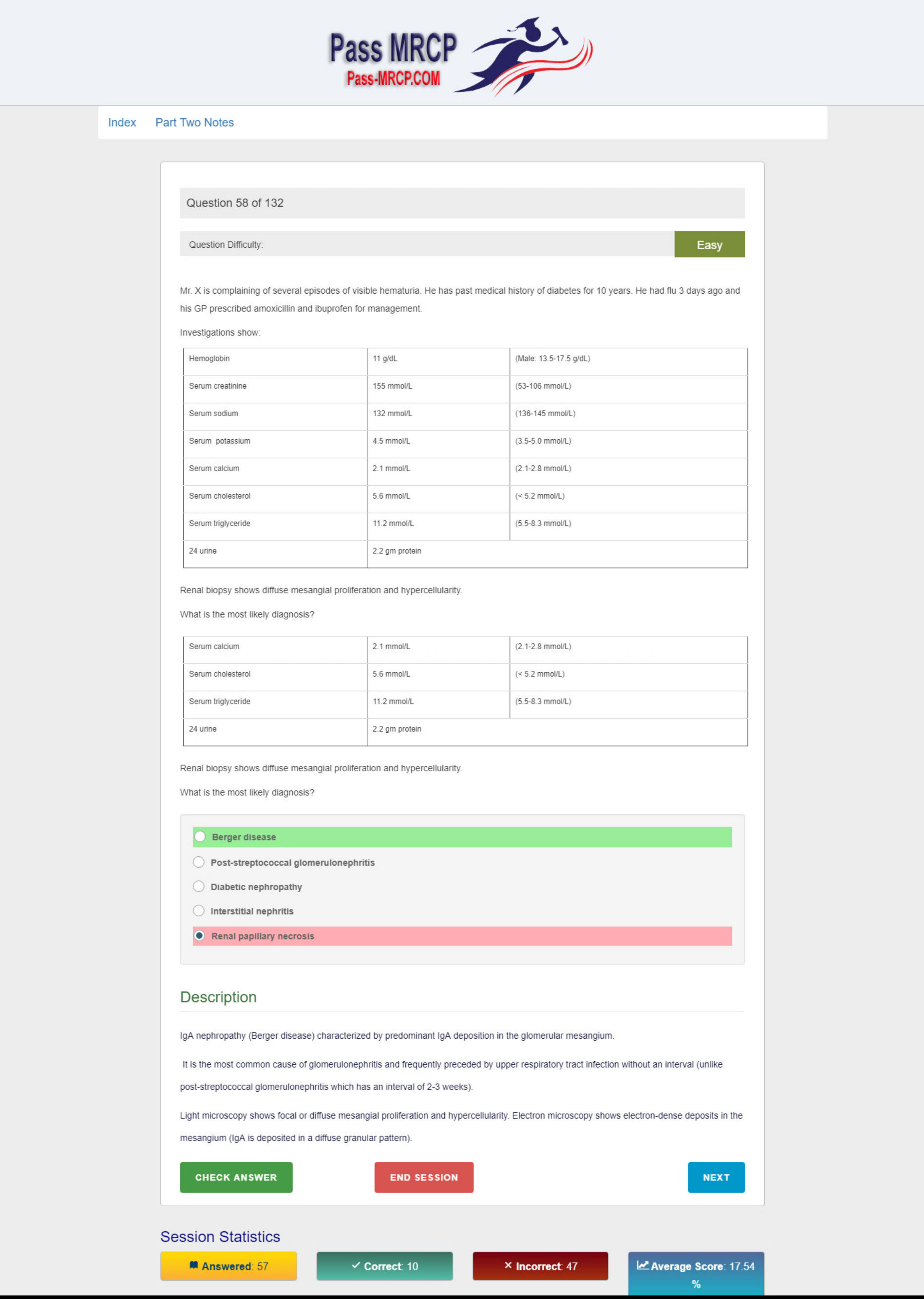
Description

Type 4 RTA is manifested by metabolic acidosis, secondary hypoaldosteronism causing hyperkalemia and low urinary ph.

CHECK ANSWER
END SESSION
NEXT

Session Statistics

Answered: 56
✓ Correct: 9
✕ Incorrect: 47
Average Score: 16.07



Question 58 of 132

Question Difficulty: **Easy**

Mr. X is complaining of several episodes of visible hematuria. He has past medical history of diabetes for 10 years. He had flu 3 days ago and his GP prescribed amoxicillin and ibuprofen for management.

Investigations show:

Hemoglobin	11 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	155 mmol/L	(53-106 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.1 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	5.6 mmol/L	(< 5.2 mmol/L)
Serum triglyceride	11.2 mmol/L	(5.5-8.3 mmol/L)
24 urine	2.2 gm protein	

Renal biopsy shows diffuse mesangial proliferation and hypercellularity.

What is the most likely diagnosis?

Serum calcium	2.1 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	5.6 mmol/L	(< 5.2 mmol/L)
Serum triglyceride	11.2 mmol/L	(5.5-8.3 mmol/L)
24 urine	2.2 gm protein	

Renal biopsy shows diffuse mesangial proliferation and hypercellularity.

What is the most likely diagnosis?

- ○ **Berger disease**
- ○ **Post-streptococcal glomerulonephritis**
- ○ **Diabetic nephropathy**
- ○ **Interstitial nephritis**
- ● **Renal papillary necrosis**

Description

IgA nephropathy (Berger disease) characterized by predominant IgA deposition in the glomerular mesangium.

It is the most common cause of glomerulonephritis and frequently preceded by upper respiratory tract infection without an interval (unlike post-streptococcal glomerulonephritis which has an interval of 2-3 weeks).

Light microscopy shows focal or diffuse mesangial proliferation and hypercellularity. Electron microscopy shows electron-dense deposits in the mesangium (IgA is deposited in a diffuse granular pattern).

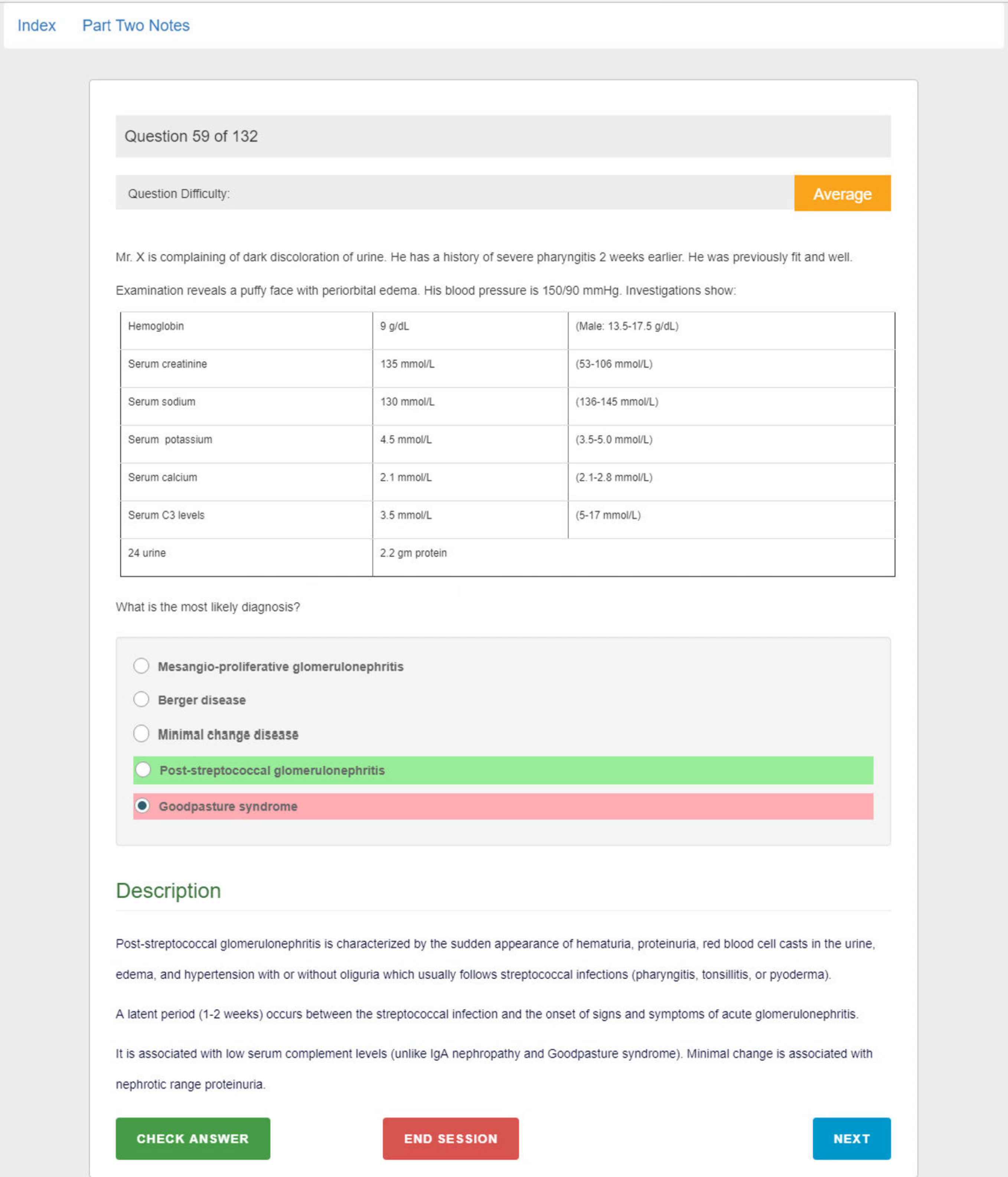
Session Statistics

Answered: 57

✓ **Correct**: 10

× **Incorrect**: 47

Average Score: 17.54 %



Question 59 of 132

Question Difficulty: Average

Mr. X is complaining of dark discoloration of urine. He has a history of severe pharyngitis 2 weeks earlier. He was previously fit and well.

Examination reveals a puffy face with periorbital edema. His blood pressure is 150/90 mmHg. Investigations show:

Hemoglobin	9 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	135 mmol/L	(53-106 mmol/L)
Serum sodium	130 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.1 mmol/L	(2.1-2.8 mmol/L)
Serum C3 levels	3.5 mmol/L	(5-17 mmol/L)
24 urine	2.2 gm protein	

What is the most likely diagnosis?

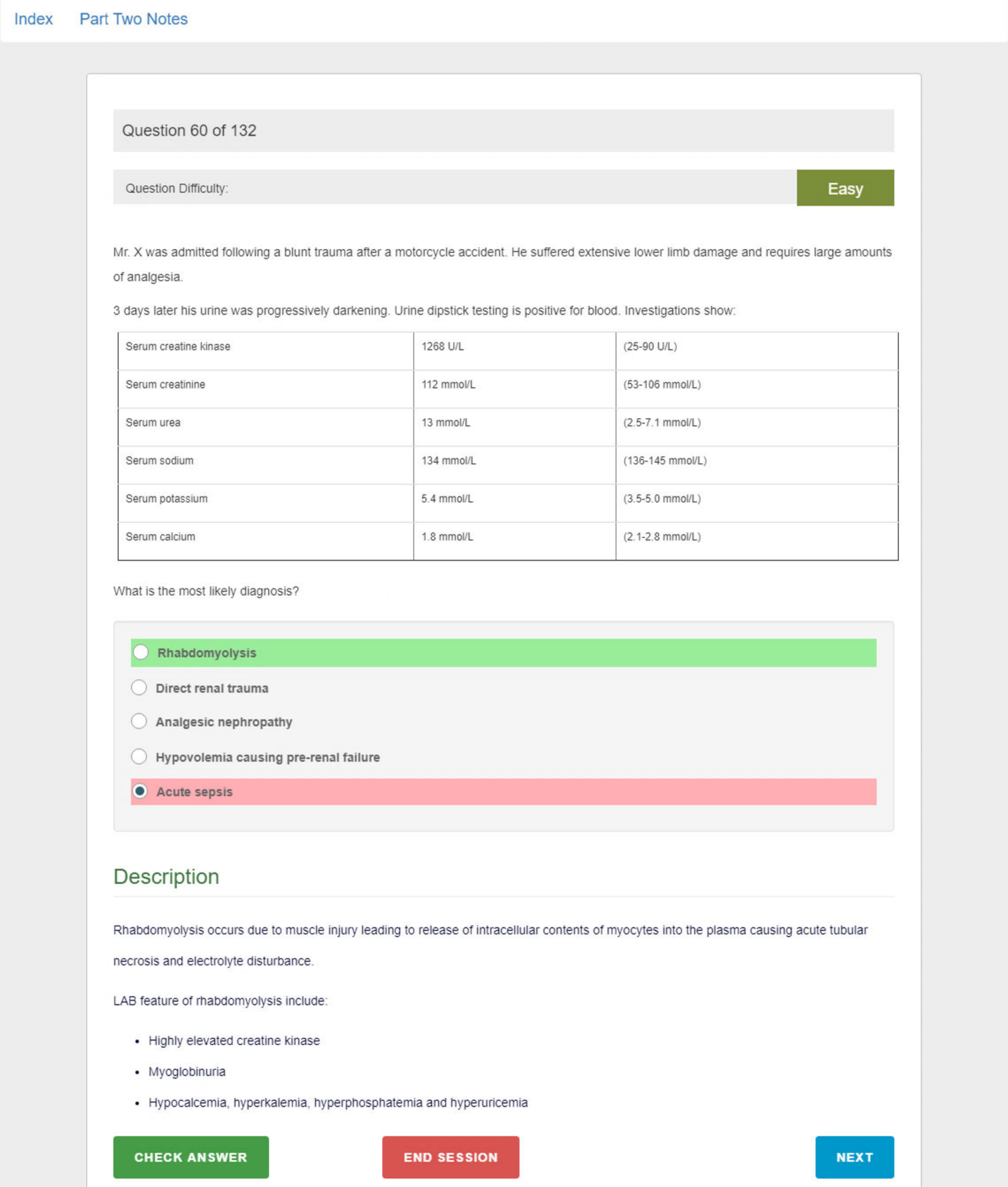
- ○ **Mesangio-proliferative glomerulonephritis**
- ○ **Berger disease**
- ○ **Minimal change disease**
- ○ **Post-streptococcal glomerulonephritis**
- ● **Goodpasture syndrome**

Description

Post-streptococcal glomerulonephritis is characterized by the sudden appearance of hematuria, proteinuria, red blood cell casts in the urine, edema, and hypertension with or without oliguria which usually follows streptococcal infections (pharyngitis, tonsillitis, or pyoderma).

A latent period (1-2 weeks) occurs between the streptococcal infection and the onset of signs and symptoms of acute glomerulonephritis.

It is associated with low serum complement levels (unlike IgA nephropathy and Goodpasture syndrome). Minimal change is associated with nephrotic range proteinuria.



Question 60 of 132

Question Difficulty: Easy

Mr. X was admitted following a blunt trauma after a motorcycle accident. He suffered extensive lower limb damage and requires large amounts of analgesia.

3 days later his urine was progressively darkening. Urine dipstick testing is positive for blood. Investigations show:

Serum creatine kinase	1268 U/L	(25-90 U/L)
Serum creatinine	112 mmol/L	(53-106 mmol/L)
Serum urea	13 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	134 mmol/L	(136-145 mmol/L)
Serum potassium	5.4 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.8 mmol/L	(2.1-2.8 mmol/L)

What is the most likely diagnosis?

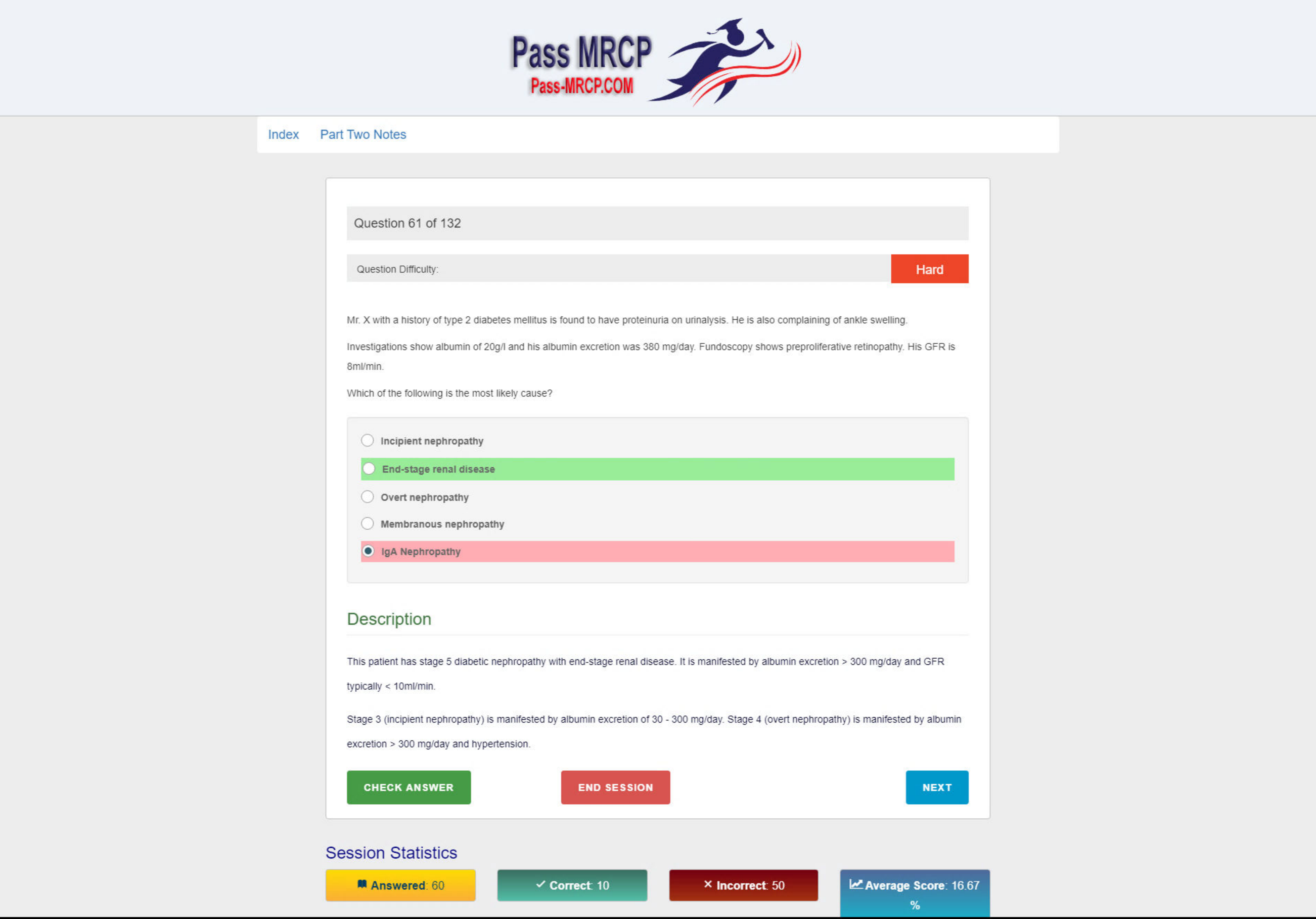
○ **Rhabdomyolysis**
○ **Direct renal trauma**
○ **Analgesic nephropathy**
○ **Hypovolemia causing pre-renal failure**
● **Acute sepsis**

Description

Rhabdomyolysis occurs due to muscle injury leading to release of intracellular contents of myocytes into the plasma causing acute tubular necrosis and electrolyte disturbance.

LAB feature of rhabdomyolysis include:

- Highly elevated creatine kinase
- Myoglobinuria
- Hypocalcemia, hyperkalemia, hyperphosphatemia and hyperuricemia



Question 61 of 132

Question Difficulty: Hard

Mr. X with a history of type 2 diabetes mellitus is found to have proteinuria on urinalysis. He is also complaining of ankle swelling.

Investigations show albumin of 20g/l and his albumin excretion was 380 mg/day. Fundoscopy shows preproliferative retinopathy. His GFR is 8ml/min.

Which of the following is the most likely cause?

- ○ Incipient nephropathy
- ○ End-stage renal disease
- ○ Overt nephropathy
- ○ Membranous nephropathy
- ● IgA Nephropathy

Description

This patient has stage 5 diabetic nephropathy with end-stage renal disease. It is manifested by albumin excretion > 300 mg/day and GFR typically < 10ml/min.

Stage 3 (incipient nephropathy) is manifested by albumin excretion of 30 - 300 mg/day. Stage 4 (overt nephropathy) is manifested by albumin excretion > 300 mg/day and hypertension.

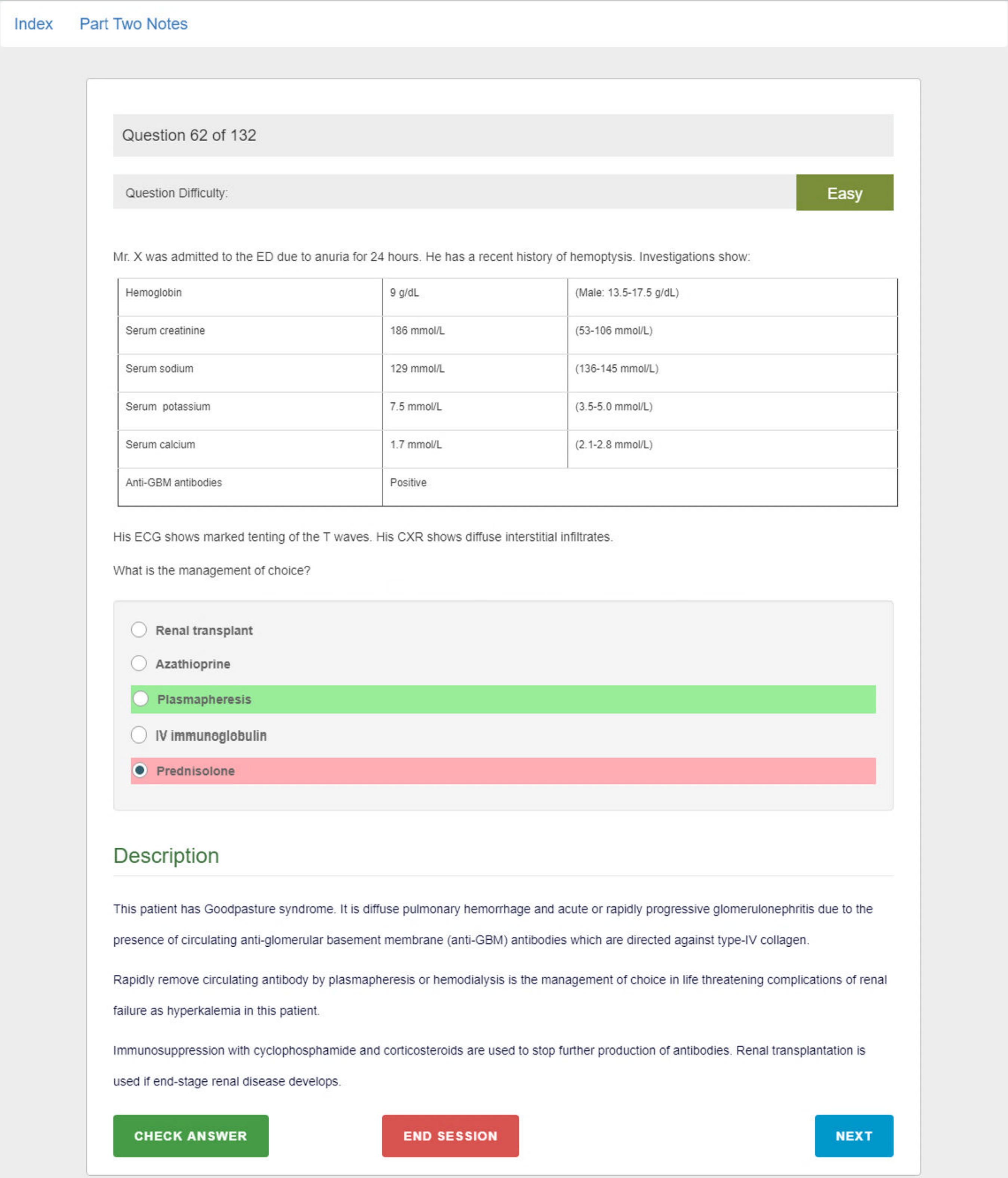
Session Statistics

Answered: 60

✓ Correct: 10

✕ Incorrect: 50

Average Score: 16.67 %



Question 62 of 132

Question Difficulty: Easy

Mr. X was admitted to the ED due to anuria for 24 hours. He has a recent history of hemoptysis. Investigations show:

Hemoglobin	9 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	186 mmol/L	(53-106 mmol/L)
Serum sodium	129 mmol/L	(136-145 mmol/L)
Serum potassium	7.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.7 mmol/L	(2.1-2.8 mmol/L)
Anti-GBM antibodies	Positive	

His ECG shows marked tenting of the T waves. His CXR shows diffuse interstitial infiltrates.

What is the management of choice?

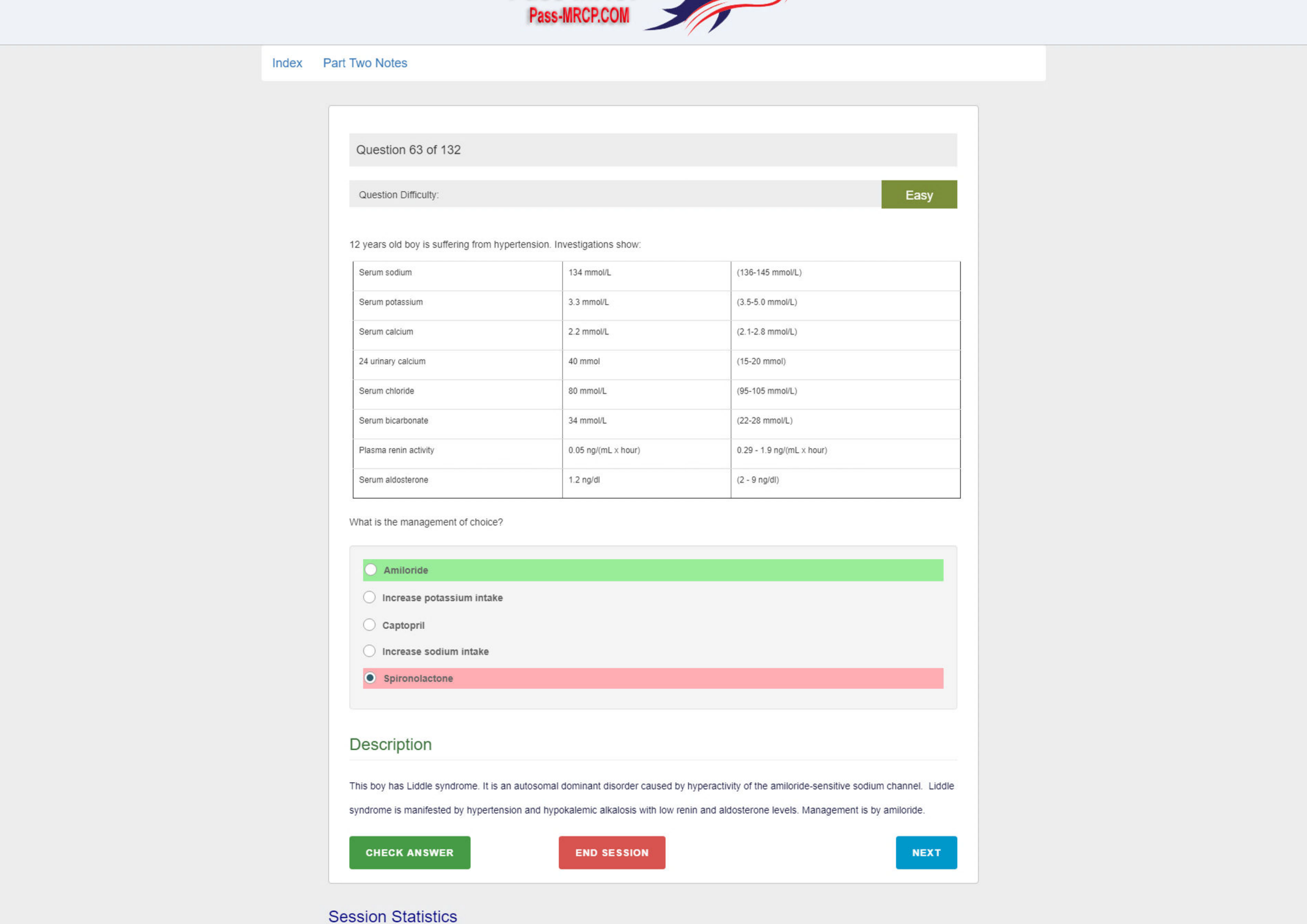
- ○ **Renal transplant**
- ○ **Azathioprine**
- ○ **Plasmapheresis**
- ○ **IV immunoglobulin**
- ● **Prednisolone**

Description

This patient has Goodpasture syndrome. It is diffuse pulmonary hemorrhage and acute or rapidly progressive glomerulonephritis due to the presence of circulating anti-glomerular basement membrane (anti-GBM) antibodies which are directed against type-IV collagen.

Rapidly remove circulating antibody by plasmapheresis or hemodialysis is the management of choice in life threatening complications of renal failure as hyperkalemia in this patient.

Immunosuppression with cyclophosphamide and corticosteroids are used to stop further production of antibodies. Renal transplantation is used if end-stage renal disease develops.



Question 63 of 132

Question Difficulty: **Easy**

12 years old boy is suffering from hypertension. Investigations show:

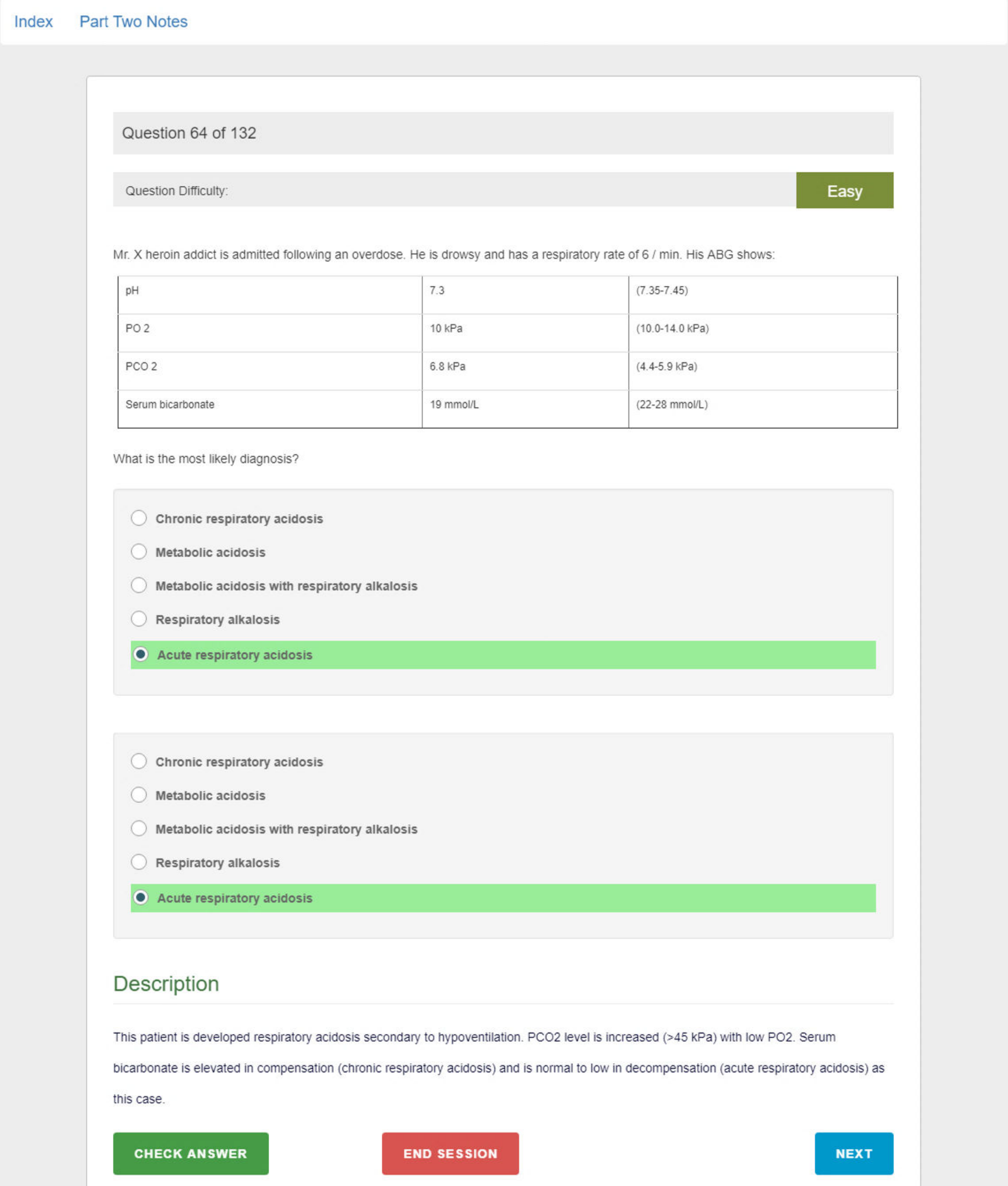
Serum sodium	134 mmol/L	(136-145 mmol/L)
Serum potassium	3.3 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.2 mmol/L	(2.1-2.8 mmol/L)
24 urinary calcium	40 mmol	(15-20 mmol)
Serum chloride	80 mmol/L	(95-105 mmol/L)
Serum bicarbonate	34 mmol/L	(22-28 mmol/L)
Plasma renin activity	0.05 ng/(mL x hour)	0.29 - 1.9 ng/(mL x hour)
Serum aldosterone	1.2 ng/dl	(2 - 9 ng/dl)

What is the management of choice?

- ○ **Amiloride**
- ○ **Increase potassium intake**
- ○ **Captopril**
- ○ **Increase sodium intake**
- ● **Spironolactone**

Description

This boy has Liddle syndrome. It is an autosomal dominant disorder caused by hyperactivity of the amiloride-sensitive sodium channel. Liddle syndrome is manifested by hypertension and hypokalemic alkalosis with low renin and aldosterone levels. Management is by amiloride.



Question 64 of 132

Question Difficulty: **Easy**

Mr. X heroin addict is admitted following an overdose. He is drowsy and has a respiratory rate of 6 / min. His ABG shows:

pH	7.3	(7.35-7.45)
PO 2	10 kPa	(10.0-14.0 kPa)
PCO 2	6.8 kPa	(4.4-5.9 kPa)
Serum bicarbonate	19 mmol/L	(22-28 mmol/L)

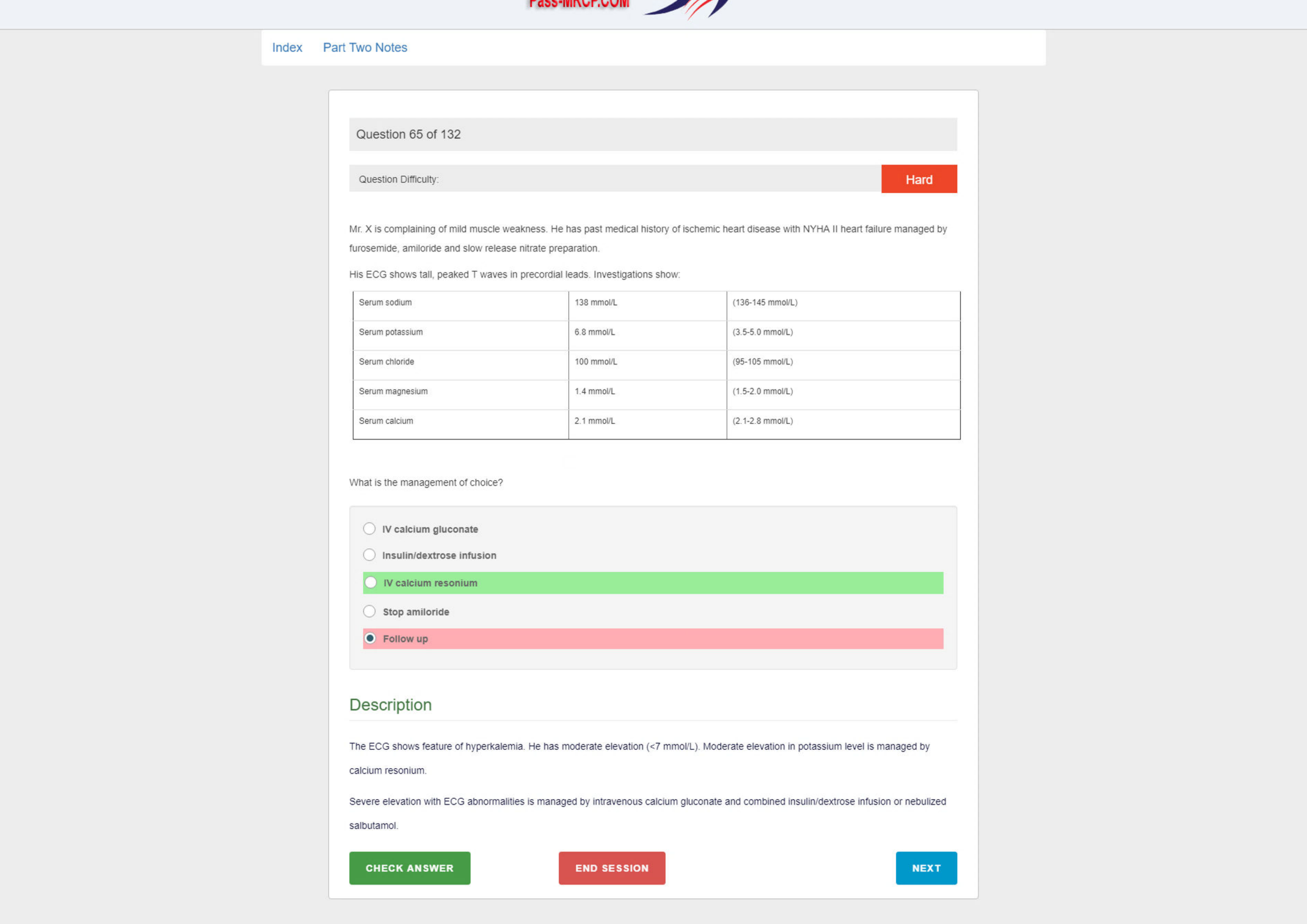
What is the most likely diagnosis?

○ **Chronic respiratory acidosis**
○ **Metabolic acidosis**
○ **Metabolic acidosis with respiratory alkalosis**
○ **Respiratory alkalosis**
● **Acute respiratory acidosis**

○ **Chronic respiratory acidosis**
○ **Metabolic acidosis**
○ **Metabolic acidosis with respiratory alkalosis**
○ **Respiratory alkalosis**
● **Acute respiratory acidosis**

Description

This patient is developed respiratory acidosis secondary to hypoventilation. PCO2 level is increased (>45 kPa) with low PO2. Serum bicarbonate is elevated in compensation (chronic respiratory acidosis) and is normal to low in decompensation (acute respiratory acidosis) as this case.



Question 65 of 132

Question Difficulty: **Hard**

Mr. X is complaining of mild muscle weakness. He has past medical history of ischemic heart disease with NYHA II heart failure managed by furosemide, amiloride and slow release nitrate preparation.

His ECG shows tall, peaked T waves in precordial leads. Investigations show:

Serum sodium	138 mmol/L	(136-145 mmol/L)
Serum potassium	6.8 mmol/L	(3.5-5.0 mmol/L)
Serum chloride	100 mmol/L	(95-105 mmol/L)
Serum magnesium	1.4 mmol/L	(1.5-2.0 mmol/L)
Serum calcium	2.1 mmol/L	(2.1-2.8 mmol/L)

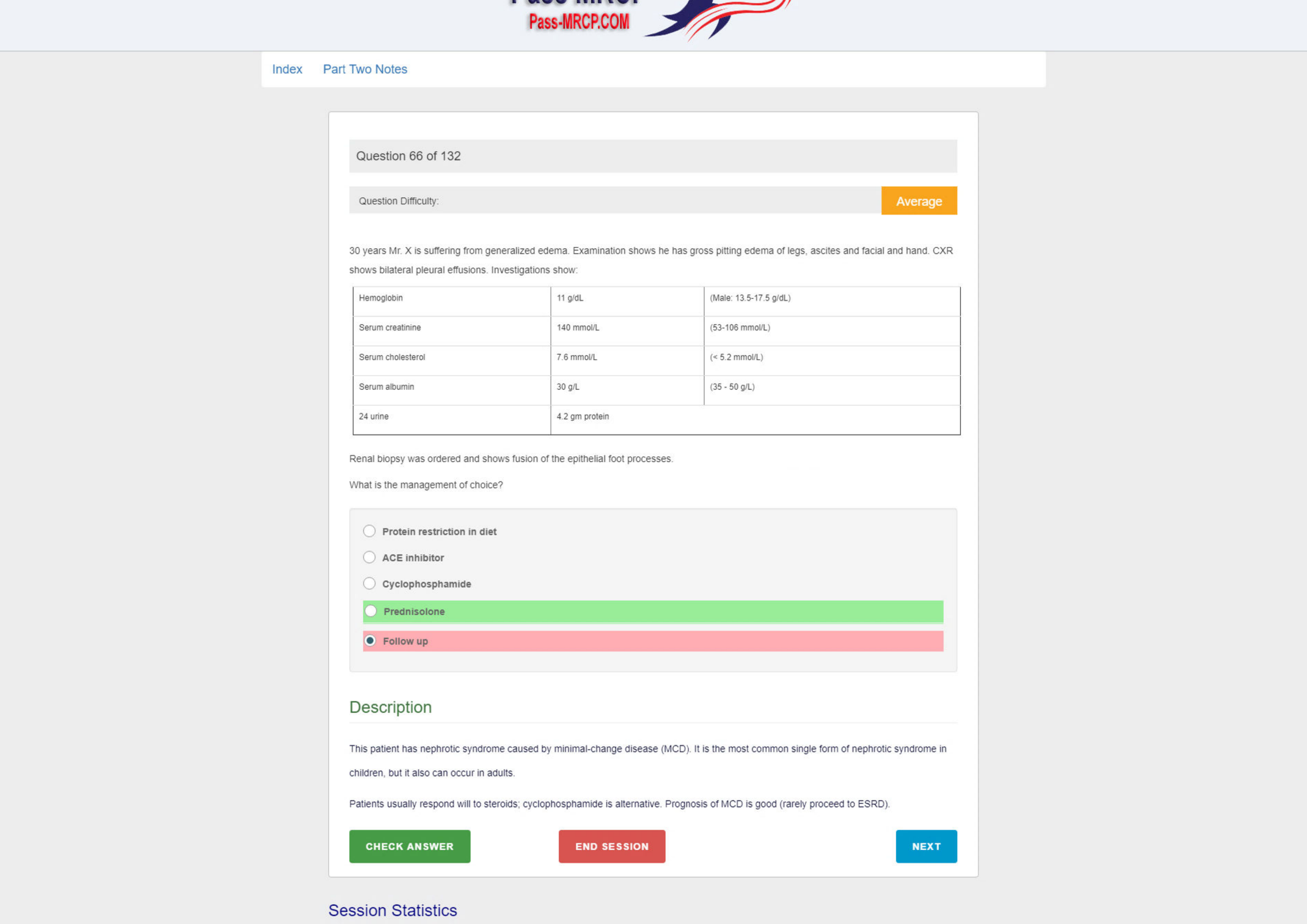
What is the management of choice?

○ **IV calcium gluconate**
○ **Insulin/dextrose infusion**
○ **IV calcium resonium**
○ **Stop amiloride**
● **Follow up**

Description

The ECG shows feature of hyperkalemia. He has moderate elevation (<7 mmol/L). Moderate elevation in potassium level is managed by calcium resonium.

Severe elevation with ECG abnormalities is managed by intravenous calcium gluconate and combined insulin/dextrose infusion or nebulized salbutamol.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Question Difficulty:
Average
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30 years Mr. X is suffering from generalized edema. Examination shows he has gross pitting edema of legs, ascites and facial and hand. CXR shows bilateral pleural effusions. Investigations show:

Hemoglobin	11 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	140 mmol/L	(53-106 mmol/L)
Serum cholesterol	7.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	30 g/L	(35 - 50 g/L)
24 urine	4.2 gm protein	

Renal biopsy was ordered and shows fusion of the epithelial foot processes.

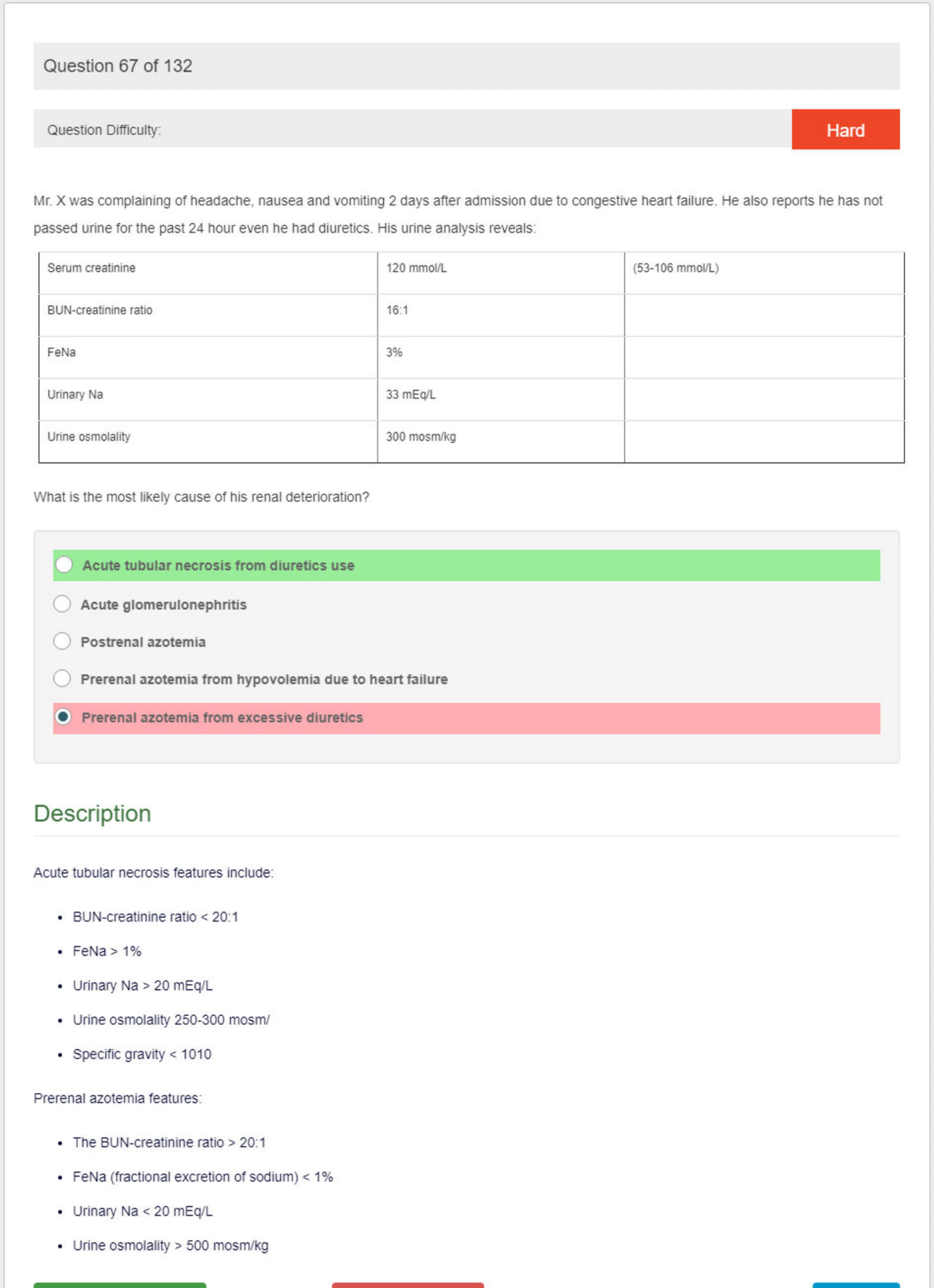
What is the management of choice?

- ○ **Protein restriction in diet**
- ○ **ACE inhibitor**
- ○ **Cyclophosphamide**
- ○ **Prednisolone**
- ● **Follow up**

Description

This patient has nephrotic syndrome caused by minimal-change disease (MCD). It is the most common single form of nephrotic syndrome in children, but it also can occur in adults.

Patients usually respond will to steroids; cyclophosphamide is alternative. Prognosis of MCD is good (rarely proceed to ESRD).



Question 67 of 132

Question Difficulty: **Hard**

Mr. X was complaining of headache, nausea and vomiting 2 days after admission due to congestive heart failure. He also reports he has not passed urine for the past 24 hour even he had diuretics. His urine analysis reveals:

Serum creatinine	120 mmol/L	(53-106 mmol/L)
BUN-creatinine ratio	16:1	
FeNa	3%	
Urinary Na	33 mEq/L	
Urine osmolality	300 mosm/kg	

What is the most likely cause of his renal deterioration?

○ **Acute tubular necrosis from diuretics use**

○ **Acute glomerulonephritis**

○ **Postrenal azotemia**

○ **Prerenal azotemia from hypovolemia due to heart failure**

● **Prerenal azotemia from excessive diuretics**

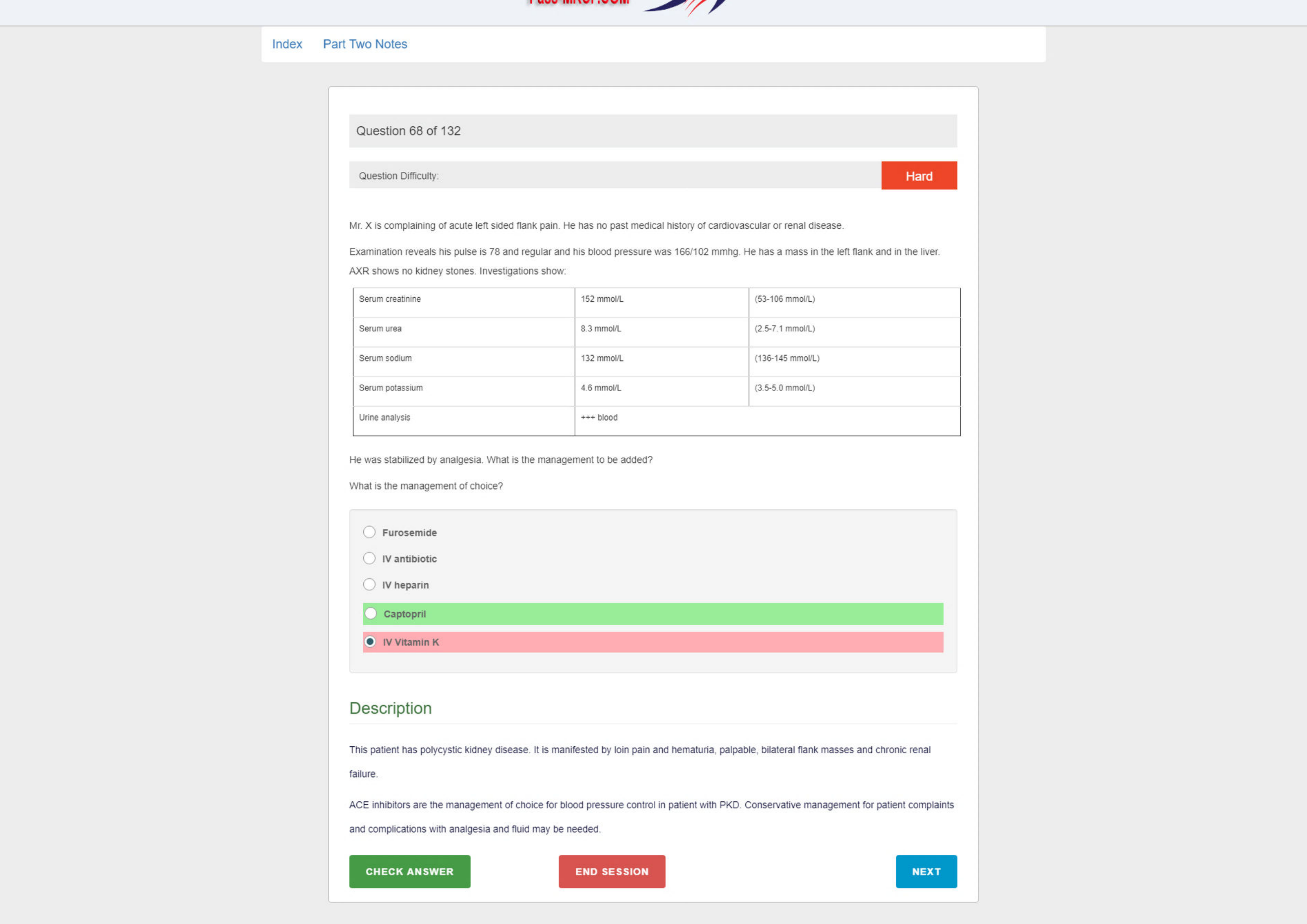
Description

Acute tubular necrosis features include:

- BUN-creatinine ratio < 20:1
- FeNa > 1%
- Urinary Na > 20 mEq/L
- Urine osmolality 250-300 mosm/
- Specific gravity < 1010

Prerenal azotemia features:

- The BUN-creatinine ratio > 20:1
- FeNa (fractional excretion of sodium) < 1%
- Urinary Na < 20 mEq/L
- Urine osmolality > 500 mosm/kg



Question 68 of 132

Question Difficulty: **Hard**

Mr. X is complaining of acute left sided flank pain. He has no past medical history of cardiovascular or renal disease.

Examination reveals his pulse is 78 and regular and his blood pressure was 166/102 mmhg. He has a mass in the left flank and in the liver. AXR shows no kidney stones. Investigations show:

Serum creatinine	152 mmol/L	(53-106 mmol/L)
Serum urea	8.3 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	4.6 mmol/L	(3.5-5.0 mmol/L)
Urine analysis	+++ blood	

He was stabilized by analgesia. What is the management to be added?

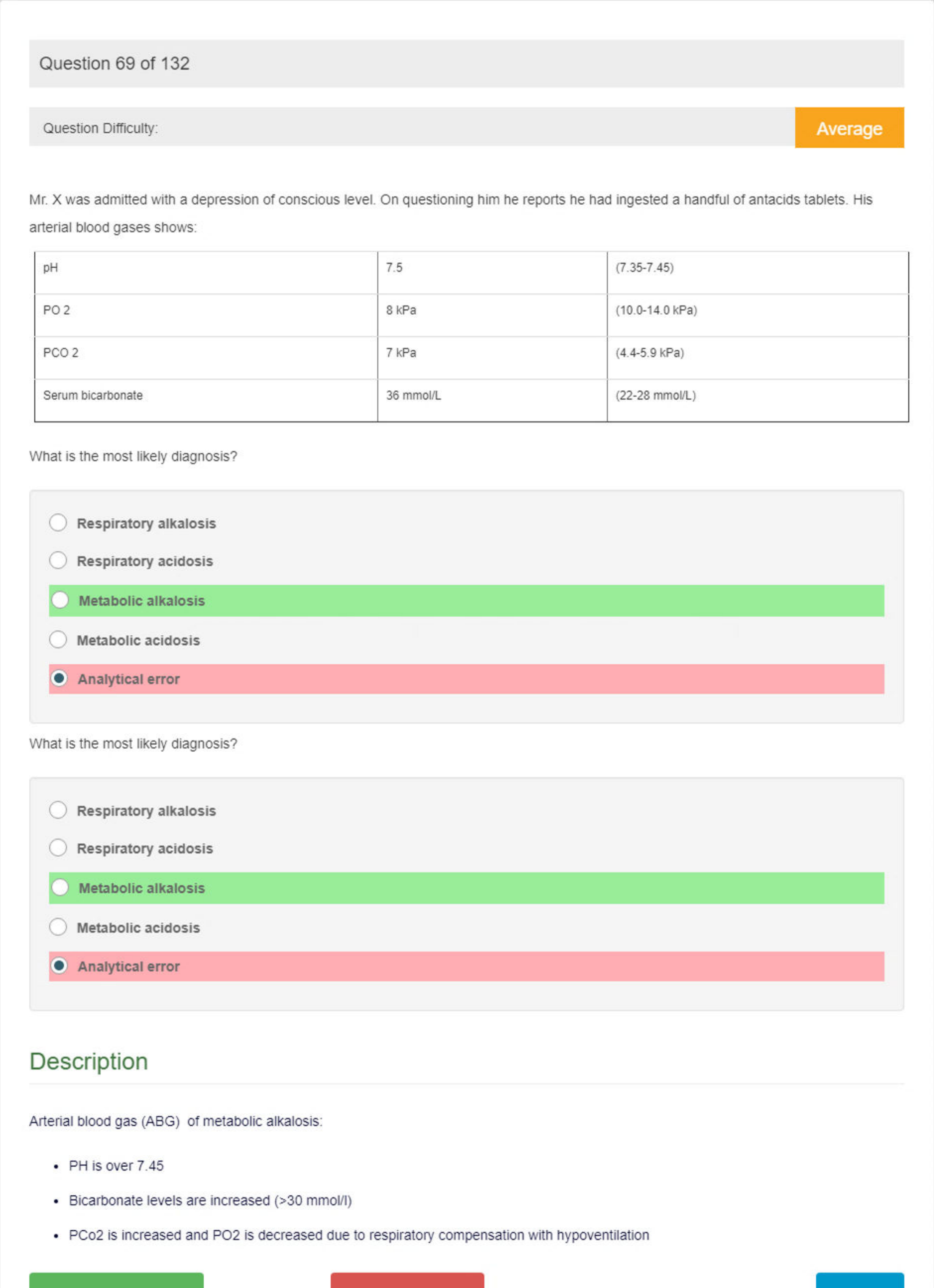
What is the management of choice?

- ○ **Furosemide**
- ○ **IV antibiotic**
- ○ **IV heparin**
- ○ **Captopril** 🟩
- ● **IV Vitamin K** 🟥

Description

This patient has polycystic kidney disease. It is manifested by loin pain and hematuria, palpable, bilateral flank masses and chronic renal failure.

ACE inhibitors are the management of choice for blood pressure control in patient with PKD. Conservative management for patient complaints and complications with analgesia and fluid may be needed.



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Question Difficulty: **Average**

Mr. X was admitted with a depression of conscious level. On questioning him he reports he had ingested a handful of antacids tablets. His arterial blood gases shows:

pH	7.5	(7.35-7.45)
PO 2	8 kPa	(10.0-14.0 kPa)
PCO 2	7 kPa	(4.4-5.9 kPa)
Serum bicarbonate	36 mmol/L	(22-28 mmol/L)

What is the most likely diagnosis?

- ○ **Respiratory alkalosis**
- ○ **Respiratory acidosis**
- ○ **Metabolic alkalosis**
- ○ **Metabolic acidosis**
- ● **Analytical error**

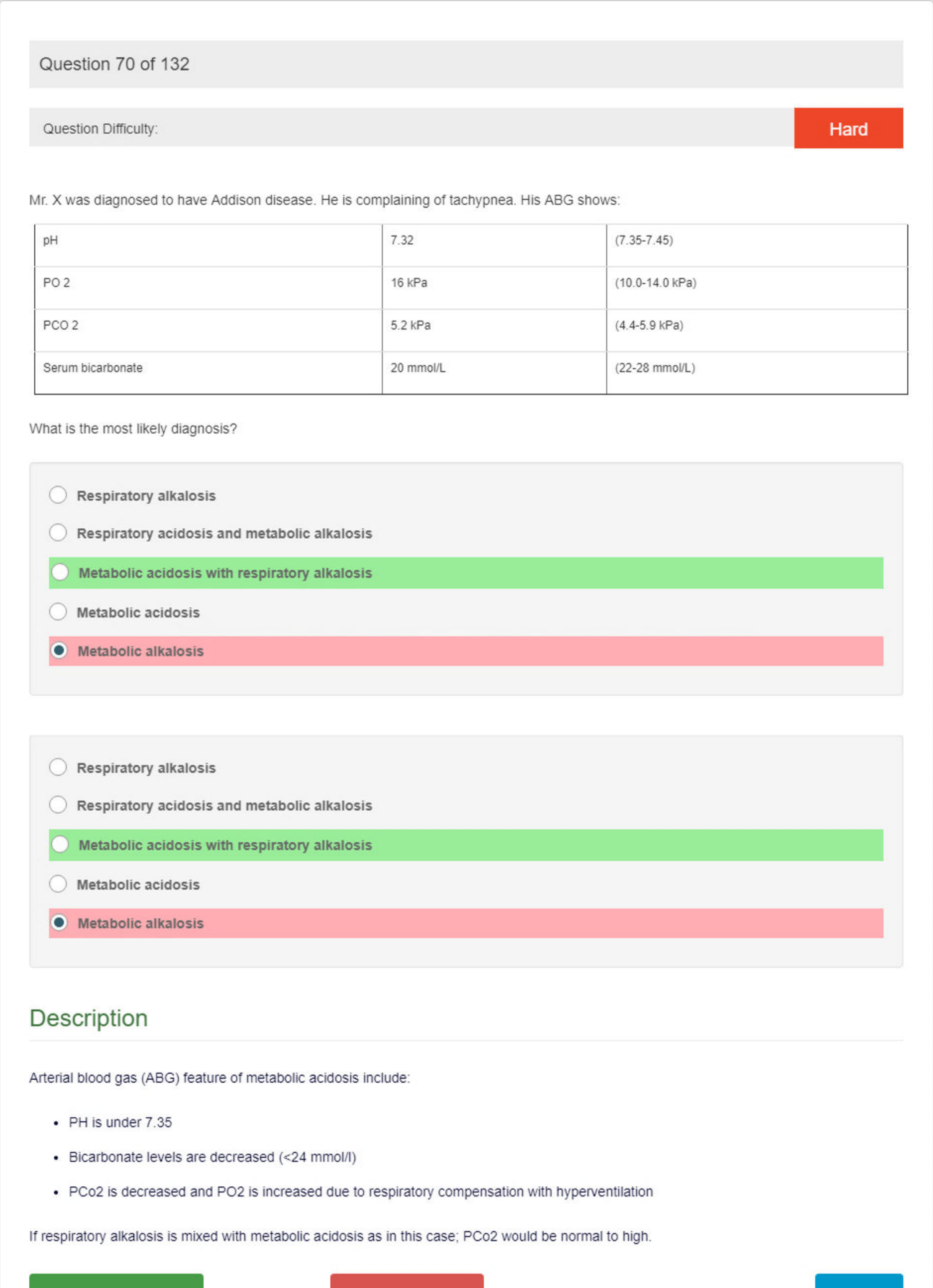
What is the most likely diagnosis?

- ○ **Respiratory alkalosis**
- ○ **Respiratory acidosis**
- ○ **Metabolic alkalosis**
- ○ **Metabolic acidosis**
- ● **Analytical error**

Description

Arterial blood gas (ABG) of metabolic alkalosis:

- PH is over 7.45
- Bicarbonate levels are increased (>30 mmol/l)
- PCo2 is increased and PO2 is decreased due to respiratory compensation with hypoventilation



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Question Difficulty: **Hard**

Mr. X was diagnosed to have Addison disease. He is complaining of tachypnea. His ABG shows:

pH	7.32	(7.35-7.45)
PO 2	16 kPa	(10.0-14.0 kPa)
PCO 2	5.2 kPa	(4.4-5.9 kPa)
Serum bicarbonate	20 mmol/L	(22-28 mmol/L)

What is the most likely diagnosis?

○ **Respiratory alkalosis**
○ **Respiratory acidosis and metabolic alkalosis**
○ **Metabolic acidosis with respiratory alkalosis**
○ **Metabolic acidosis**
● **Metabolic alkalosis**

○ **Respiratory alkalosis**
○ **Respiratory acidosis and metabolic alkalosis**
○ **Metabolic acidosis with respiratory alkalosis**
○ **Metabolic acidosis**
● **Metabolic alkalosis**

Description

Arterial blood gas (ABG) feature of metabolic acidosis include:

- PH is under 7.35
- Bicarbonate levels are decreased (<24 mmol/l)
- PCo2 is decreased and PO2 is increased due to respiratory compensation with hyperventilation

If respiratory alkalosis is mixed with metabolic acidosis as in this case; PCo2 would be normal to high.

Question 71 of 132

Question Difficulty: **Easy**

Mr. X with a long history of diabetic nephropathy is complaining of increasing lower limb edema and ascites. His current management includes ramipril, insulin and metformin. Investigations show:

Hemoglobin	11 g/dL	(13.5-17.5 g/dL)
Serum creatinine	140 mmol/L	(53-106 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	7.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	32 g/L	(35 - 50 g/L)
24 urine	3.2 gm protein	

He was started on diuretic, sodium restriction and adequate dietary protein intake but 2 days later his urine output suddenly stopped and his edema increased reaching his hands and face. Investigations show:

Serum creatinine	260 mmol/L	(53-106 mmol/L)
Serum cholesterol	[illegible] 7.6 mmol/L	[illegible] (< 5.2 mmol/L)
Serum albumin	32 g/L	(35 - 50 g/L)
24 urine	3.2 gm protein	

He was started on diuretic, sodium restriction and adequate dietary protein intake but 2 days later his urine output suddenly stopped and his edema increased reaching his hands and face. Investigations show:

Serum creatinine	260 mmol/L	(53-106 mmol/L)
Serum sodium	128 mmol/L	(136-145 mmol/L)
Serum potassium	6.5 mmol/L	(3.5-5.0 mmol/L)
Serum albumin	22 g/L	(35 - 50 g/L)
24 urine	5.2 gm protein and ++++ blood	

What is the most likely cause for the acute deterioration in renal function?

- ○ **Renal calculus**
- ○ **Renal infarction**
- ○ **Renal vein thrombosis**
- ○ **Acute pyelonephritis**
- ● **Renal artery stenosis**

Description

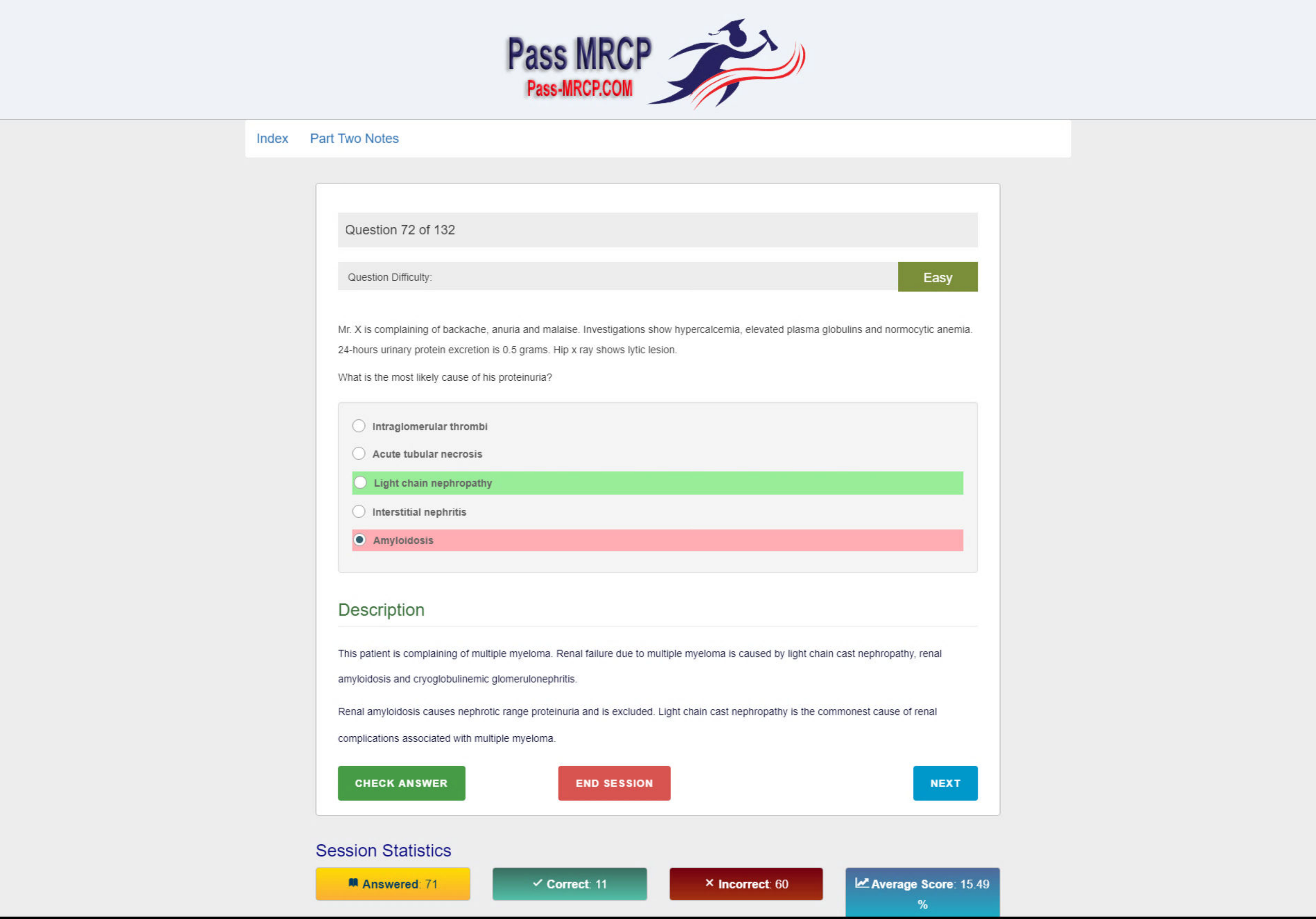
This patient has nephrotic syndrome. It is manifested by face and dependent parts edema, nephrotic-range proteinuria of > 3 grams per day and hypercholesterolemia.

Nephrotic syndrome is associated with thrombotic complication as renal vein thrombosis due to raised plasma fibrinogen levels and loss of antithrombin III. Renal vein thrombosis is manifested by rapid deterioration in renal functions.

CHECK ANSWER END SESSION NEXT

Session Statistics

Answered: 70 ✓ **Correct**: 11 × **Incorrect**: 59 **Average Score**: 15.71 %



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Question Difficulty: **Easy**

Mr. X is complaining of backache, anuria and malaise. Investigations show hypercalcemia, elevated plasma globulins and normocytic anemia. 24-hours urinary protein excretion is 0.5 grams. Hip x ray shows lytic lesion.

What is the most likely cause of his proteinuria?

- ○ **Intraglomerular thrombi**
- ○ **Acute tubular necrosis**
- ○ **Light chain nephropathy**
- ○ **Interstitial nephritis**
- ● **Amyloidosis**

Description

This patient is complaining of multiple myeloma. Renal failure due to multiple myeloma is caused by light chain cast nephropathy, renal amyloidosis and cryoglobulinemic glomerulonephritis.

Renal amyloidosis causes nephrotic range proteinuria and is excluded. Light chain cast nephropathy is the commonest cause of renal complications associated with multiple myeloma.

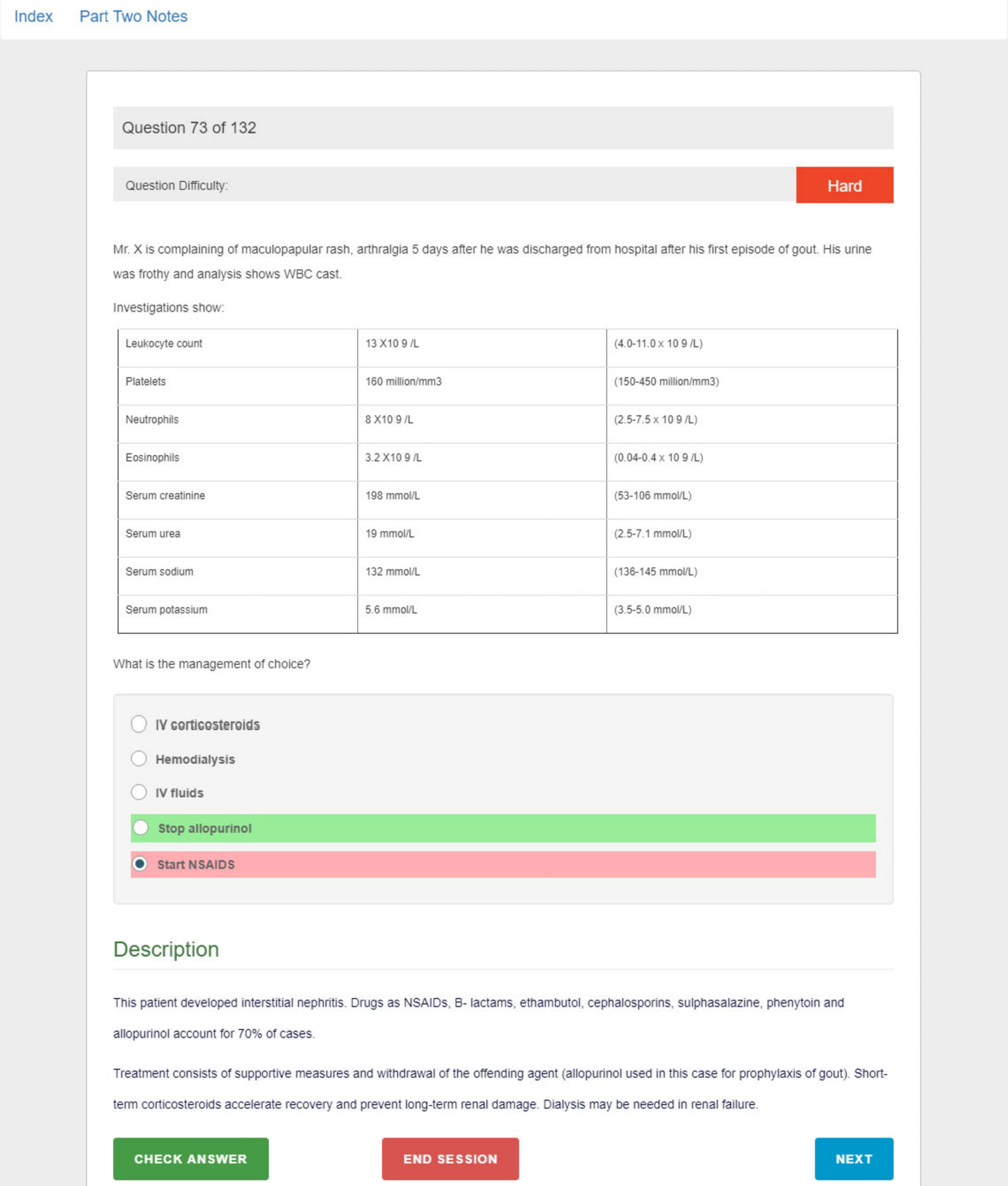
Session Statistics

Answered: 71

✓ **Correct**: 11

✕ **Incorrect**: 60

Average Score: 15.49 %



Question 73 of 132

Question Difficulty: **Hard**

Mr. X is complaining of maculopapular rash, arthralgia 5 days after he was discharged from hospital after his first episode of gout. His urine was frothy and analysis shows WBC cast.

Investigations show:

Leukocyte count	13 X10 9 /L	(4.0-11.0 x 10 9 /L)
Platelets	160 million/mm3	(150-450 million/mm3)
Neutrophils	8 X10 9 /L	(2.5-7.5 x 10 9 /L)
Eosinophils	3.2 X10 9 /L	(0.04-0.4 x 10 9 /L)
Serum creatinine	198 mmol/L	(53-106 mmol/L)
Serum urea	19 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	5.6 mmol/L	(3.5-5.0 mmol/L)

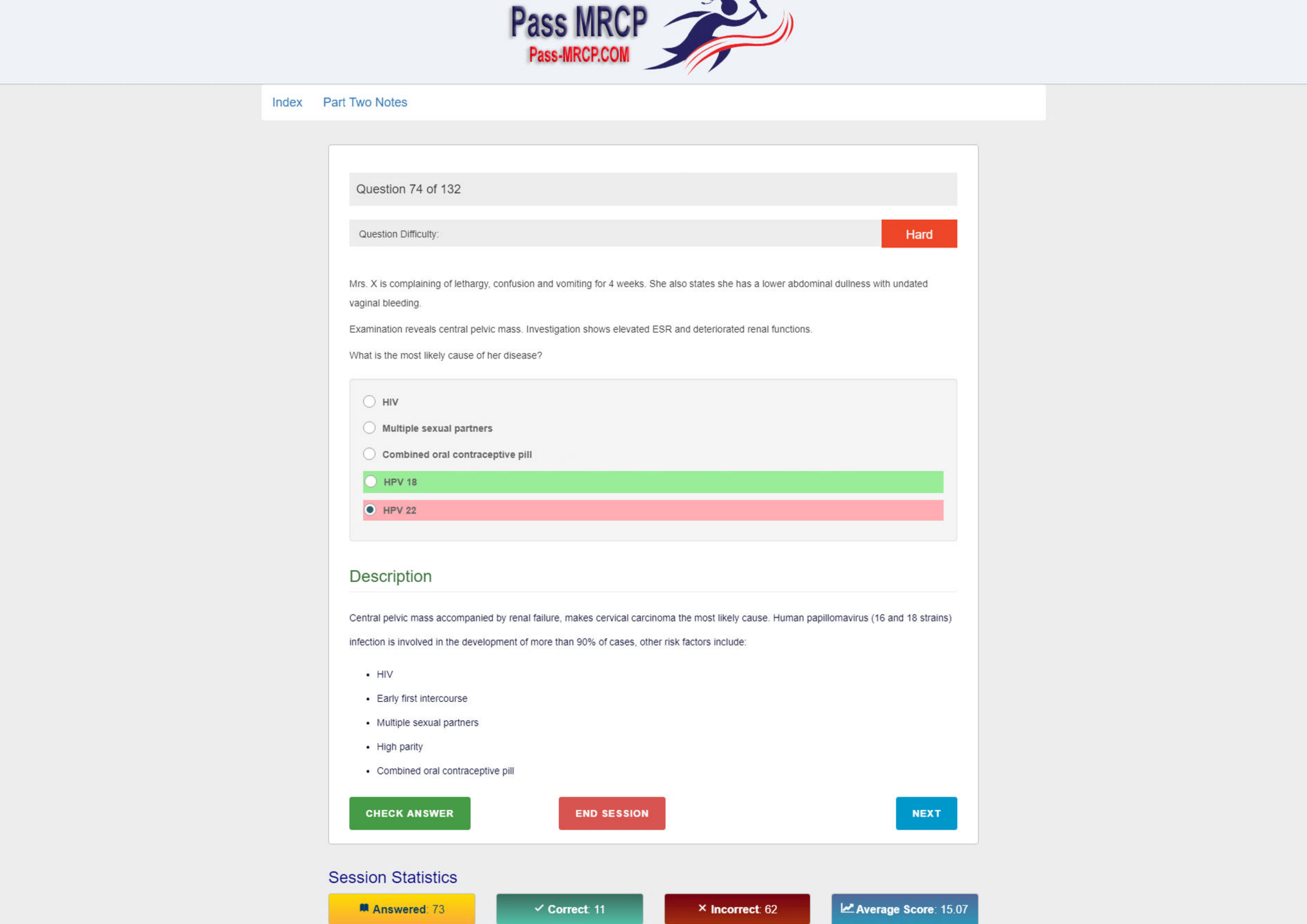
What is the management of choice?

○ **IV corticosteroids**
○ **Hemodialysis**
○ **IV fluids**
○ **Stop allopurinol**
● **Start NSAIDS**

Description

This patient developed interstitial nephritis. Drugs as NSAIDs, B- lactams, ethambutol, cephalosporins, sulphasalazine, phenytoin and allopurinol account for 70% of cases.

Treatment consists of supportive measures and withdrawal of the offending agent (allopurinol used in this case for prophylaxis of gout). Short-term corticosteroids accelerate recovery and prevent long-term renal damage. Dialysis may be needed in renal failure.



Question 74 of 132

Question Difficulty: Hard

Mrs. X is complaining of lethargy, confusion and vomiting for 4 weeks. She also states she has a lower abdominal dullness with undated vaginal bleeding.

Examination reveals central pelvic mass. Investigation shows elevated ESR and deteriorated renal functions.

What is the most likely cause of her disease?

○ **HIV**

○ **Multiple sexual partners**

○ **Combined oral contraceptive pill**

○ **HPV 18**

● **HPV 22**

Description

Central pelvic mass accompanied by renal failure, makes cervical carcinoma the most likely cause. Human papillomavirus (16 and 18 strains) infection is involved in the development of more than 90% of cases, other risk factors include:

- HIV
- Early first intercourse
- Multiple sexual partners
- High parity
- Combined oral contraceptive pill

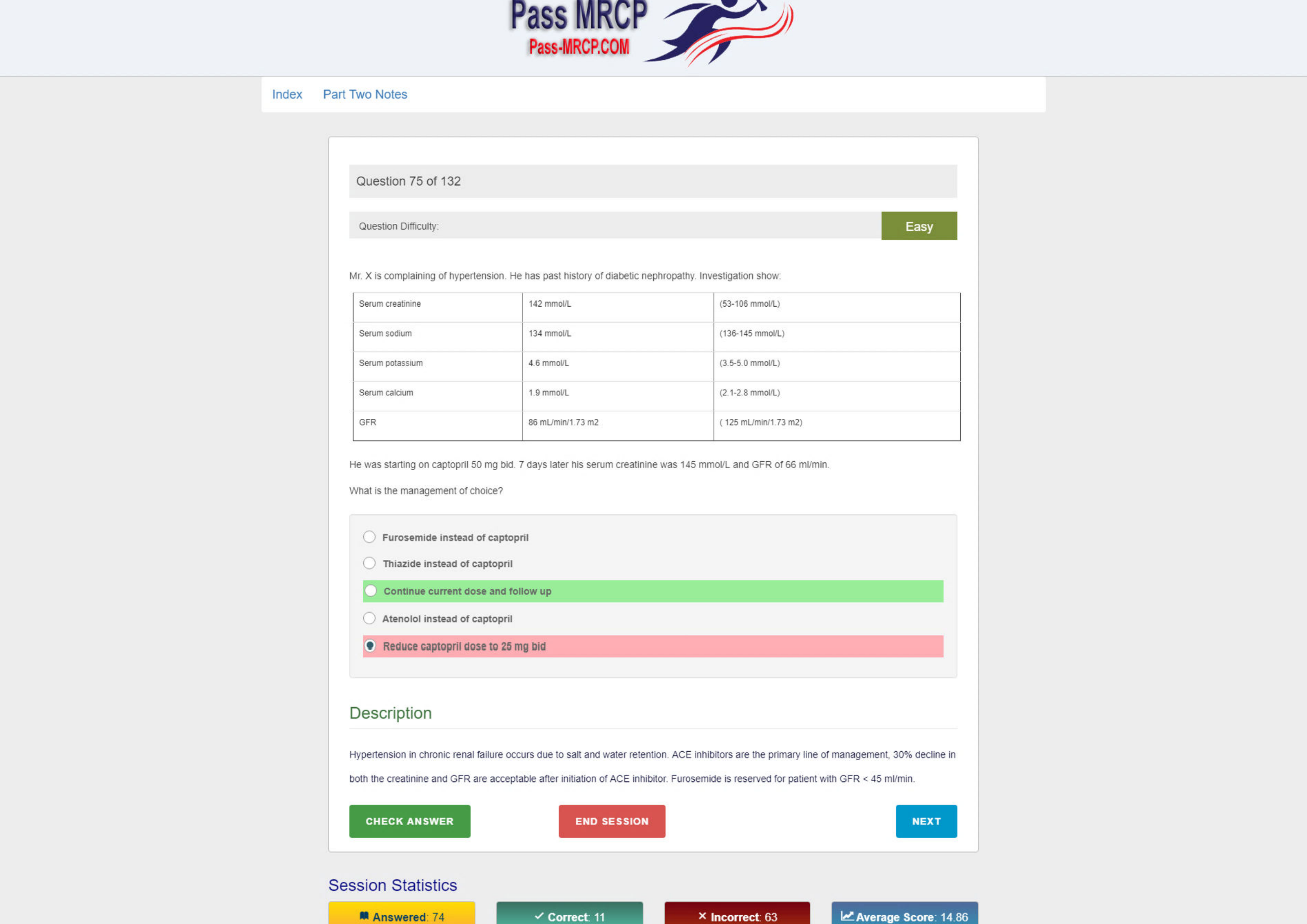
Session Statistics

Answered: 73

✓ **Correct**: 11

× **Incorrect**: 62

Average Score: 15.07



Question 75 of 132

Question Difficulty: Easy

Mr. X is complaining of hypertension. He has past history of diabetic nephropathy. Investigation show:

Serum creatinine	142 mmol/L	(53-106 mmol/L)
Serum sodium	134 mmol/L	(136-145 mmol/L)
Serum potassium	4.6 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.9 mmol/L	(2.1-2.8 mmol/L)
GFR	86 mL/min/1.73 m2	(125 mL/min/1.73 m2)

He was starting on captopril 50 mg bid. 7 days later his serum creatinine was 145 mmol/L and GFR of 66 ml/min.

What is the management of choice?

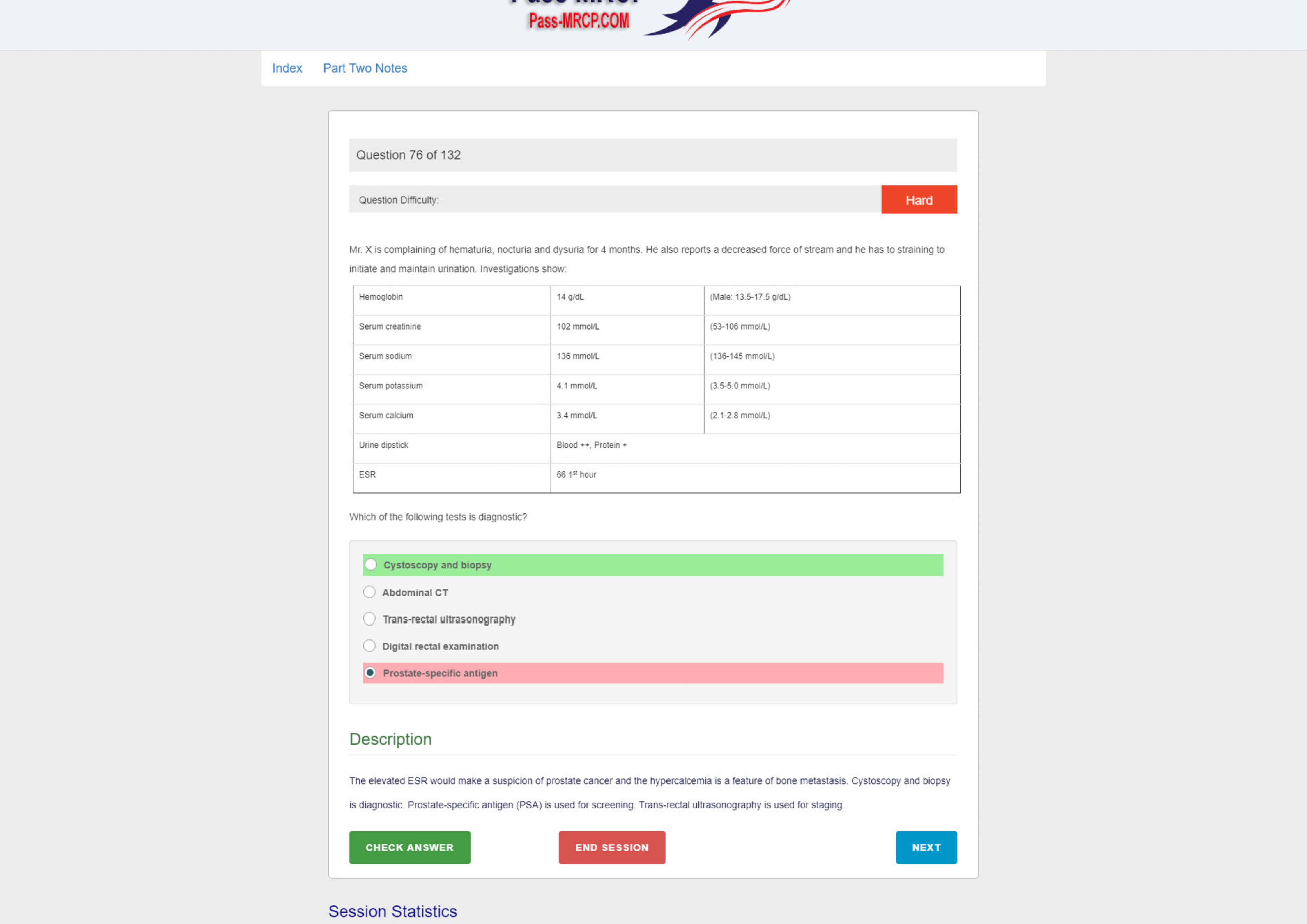
- ○ **Furosemide instead of captopril**
- ○ **Thiazide instead of captopril**
- ○ **Continue current dose and follow up**
- ○ **Atenolol instead of captopril**
- ● **Reduce captopril dose to 25 mg bid**

Description

Hypertension in chronic renal failure occurs due to salt and water retention. ACE inhibitors are the primary line of management, 30% decline in both the creatinine and GFR are acceptable after initiation of ACE inhibitor. Furosemide is reserved for patient with GFR < 45 ml/min.

Session Statistics

Answered: 74
Correct: 11
Incorrect: 63
Average Score: 14.86



Question 76 of 132

Question Difficulty: **Hard**

Mr. X is complaining of hematuria, nocturia and dysuria for 4 months. He also reports a decreased force of stream and he has to straining to initiate and maintain urination. Investigations show:

Hemoglobin	14 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	102 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	3.4 mmol/L	(2.1-2.8 mmol/L)
Urine dipstick	Blood ++, Protein +	
ESR	66 1st hour	

Which of the following tests is diagnostic?

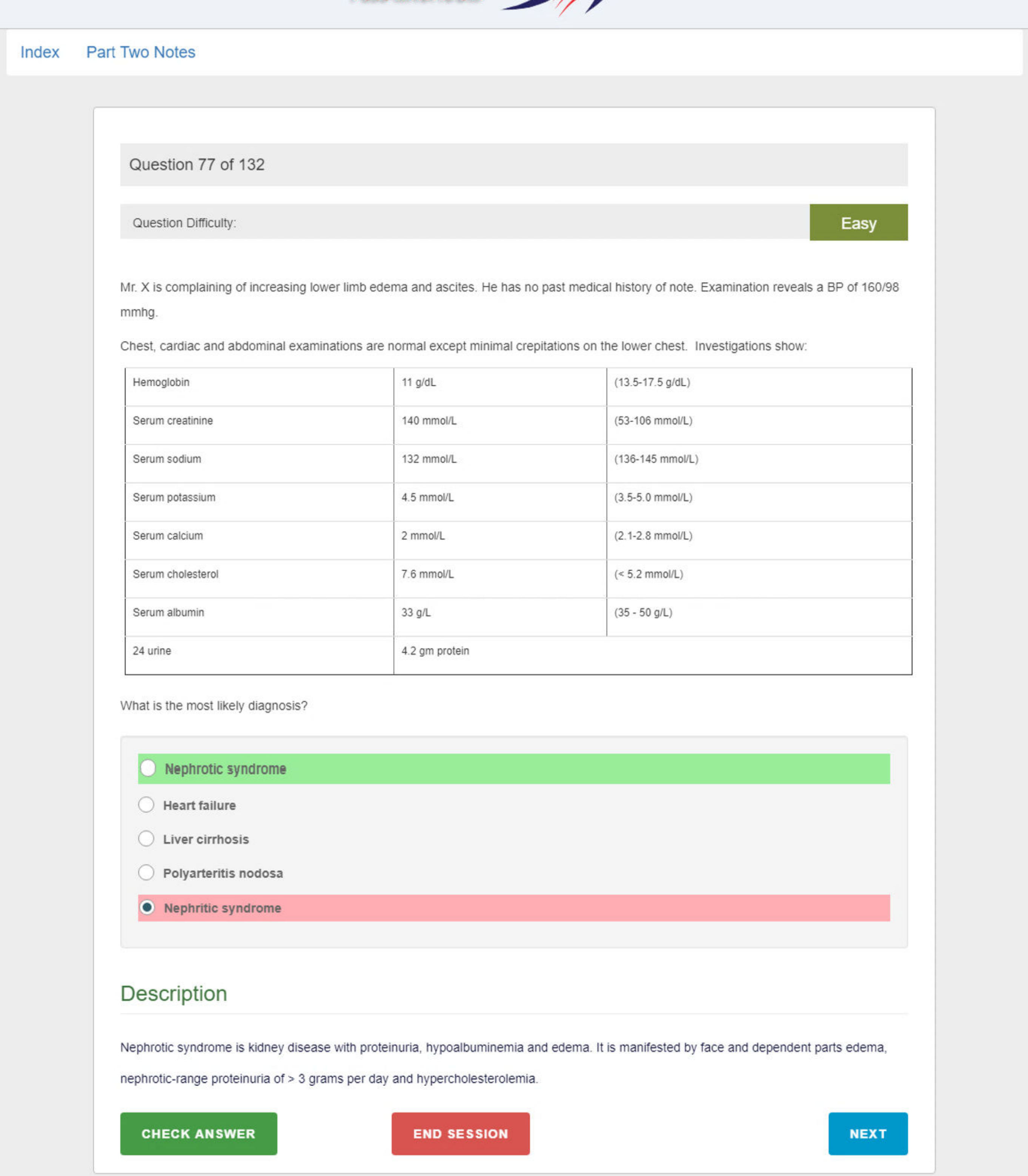
- ○ **Cystoscopy and biopsy**
- ○ **Abdominal CT**
- ○ **Trans-rectal ultrasonography**
- ○ **Digital rectal examination**
- ● **Prostate-specific antigen**

Description

The elevated ESR would make a suspicion of prostate cancer and the hypercalcemia is a feature of bone metastasis. Cystoscopy and biopsy is diagnostic. Prostate-specific antigen (PSA) is used for screening. Trans-rectal ultrasonography is used for staging.

CHECK ANSWER   END SESSION   NEXT

Session Statistics



Question 77 of 132

Question Difficulty: **Easy**

Mr. X is complaining of increasing lower limb edema and ascites. He has no past medical history of note. Examination reveals a BP of 160/98 mmhg.

Chest, cardiac and abdominal examinations are normal except minimal crepitations on the lower chest. Investigations show:

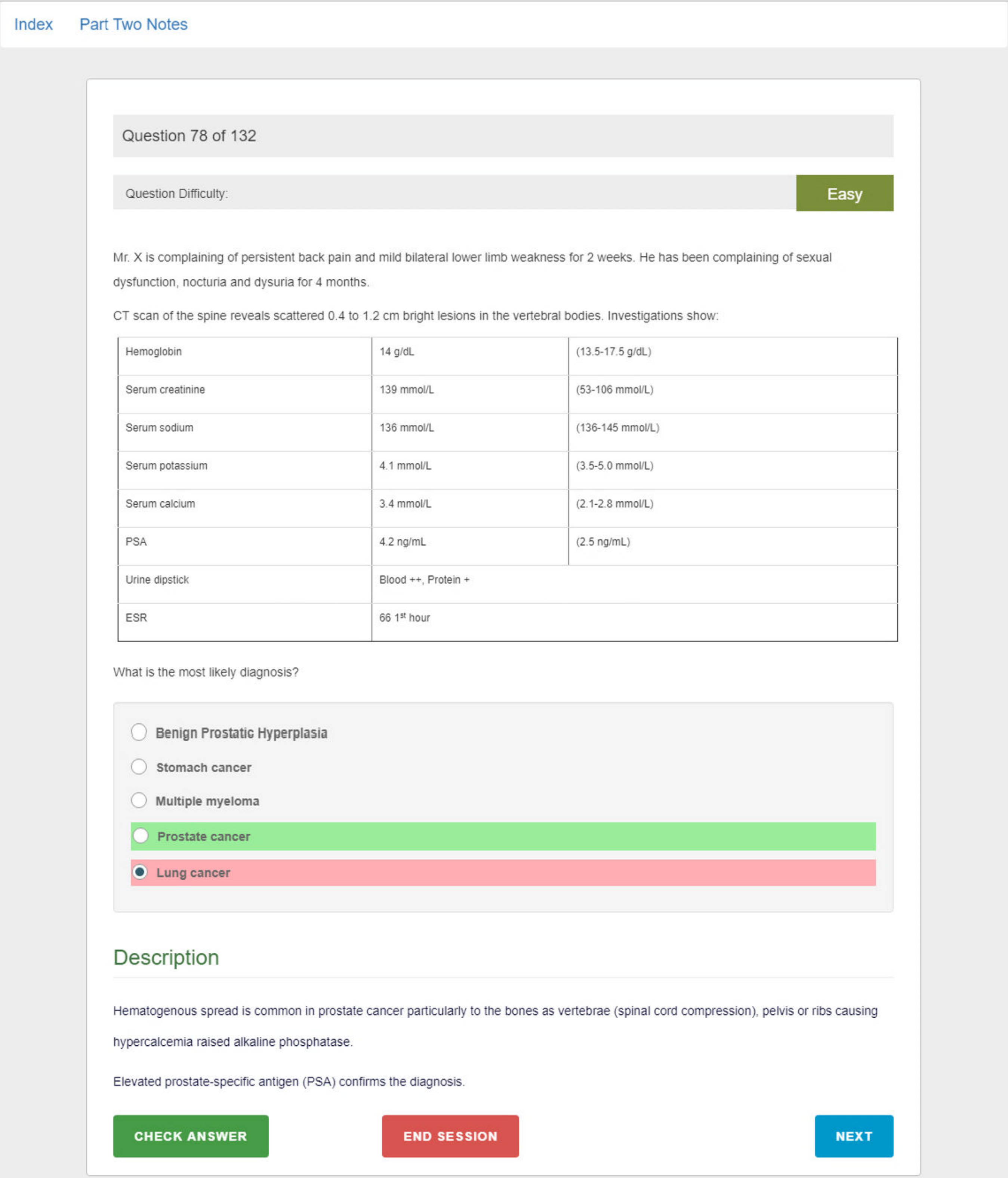
Hemoglobin	11 g/dL	(13.5-17.5 g/dL)
Serum creatinine	140 mmol/L	(53-106 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	7.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	33 g/L	(35 - 50 g/L)
24 urine	4.2 gm protein	

What is the most likely diagnosis?

- ○ **Nephrotic syndrome**
- ○ **Heart failure**
- ○ **Liver cirrhosis**
- ○ **Polyarteritis nodosa**
- ● **Nephritic syndrome**

Description

Nephrotic syndrome is kidney disease with proteinuria, hypoalbuminemia and edema. It is manifested by face and dependent parts edema, nephrotic-range proteinuria of > 3 grams per day and hypercholesterolemia.



Question 78 of 132

Question Difficulty: **Easy**

Mr. X is complaining of persistent back pain and mild bilateral lower limb weakness for 2 weeks. He has been complaining of sexual dysfunction, nocturia and dysuria for 4 months.

CT scan of the spine reveals scattered 0.4 to 1.2 cm bright lesions in the vertebral bodies. Investigations show:

Hemoglobin	14 g/dL	(13.5-17.5 g/dL)
Serum creatinine	139 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	3.4 mmol/L	(2.1-2.8 mmol/L)
PSA	4.2 ng/mL	(2.5 ng/mL)
Urine dipstick	Blood ++, Protein +	
ESR	66 1st hour	

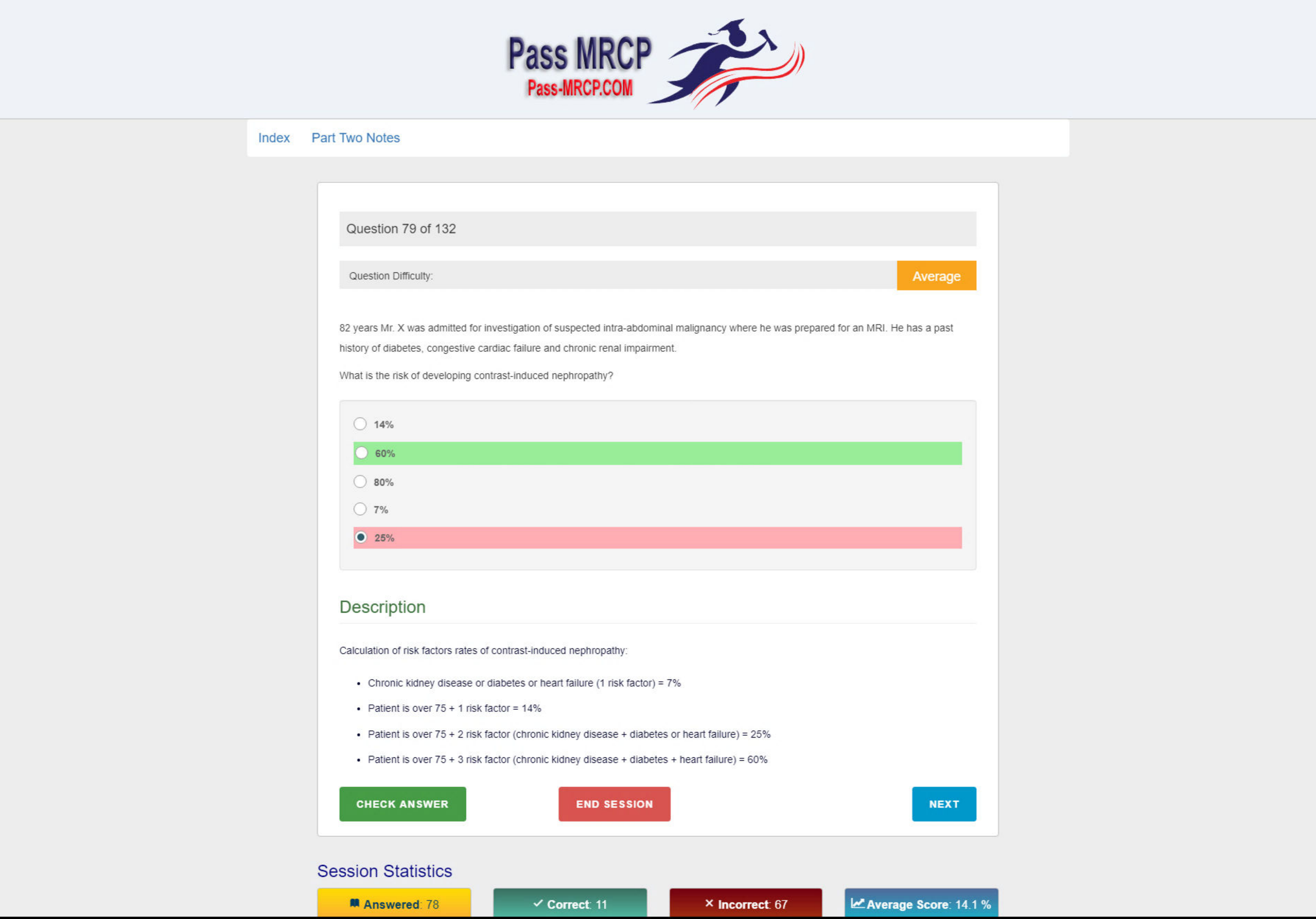
What is the most likely diagnosis?

- ○ **Benign Prostatic Hyperplasia**
- ○ **Stomach cancer**
- ○ **Multiple myeloma**
- ○ **Prostate cancer**
- ● **Lung cancer**

Description

Hematogenous spread is common in prostate cancer particularly to the bones as vertebrae (spinal cord compression), pelvis or ribs causing hypercalcemia raised alkaline phosphatase.

Elevated prostate-specific antigen (PSA) confirms the diagnosis.



Question 79 of 132

Question Difficulty: Average

82 years Mr. X was admitted for investigation of suspected intra-abdominal malignancy where he was prepared for an MRI. He has a past history of diabetes, congestive cardiac failure and chronic renal impairment.

What is the risk of developing contrast-induced nephropathy?

○ 14%
○ 60%
○ 80%
○ 7%
● 25%

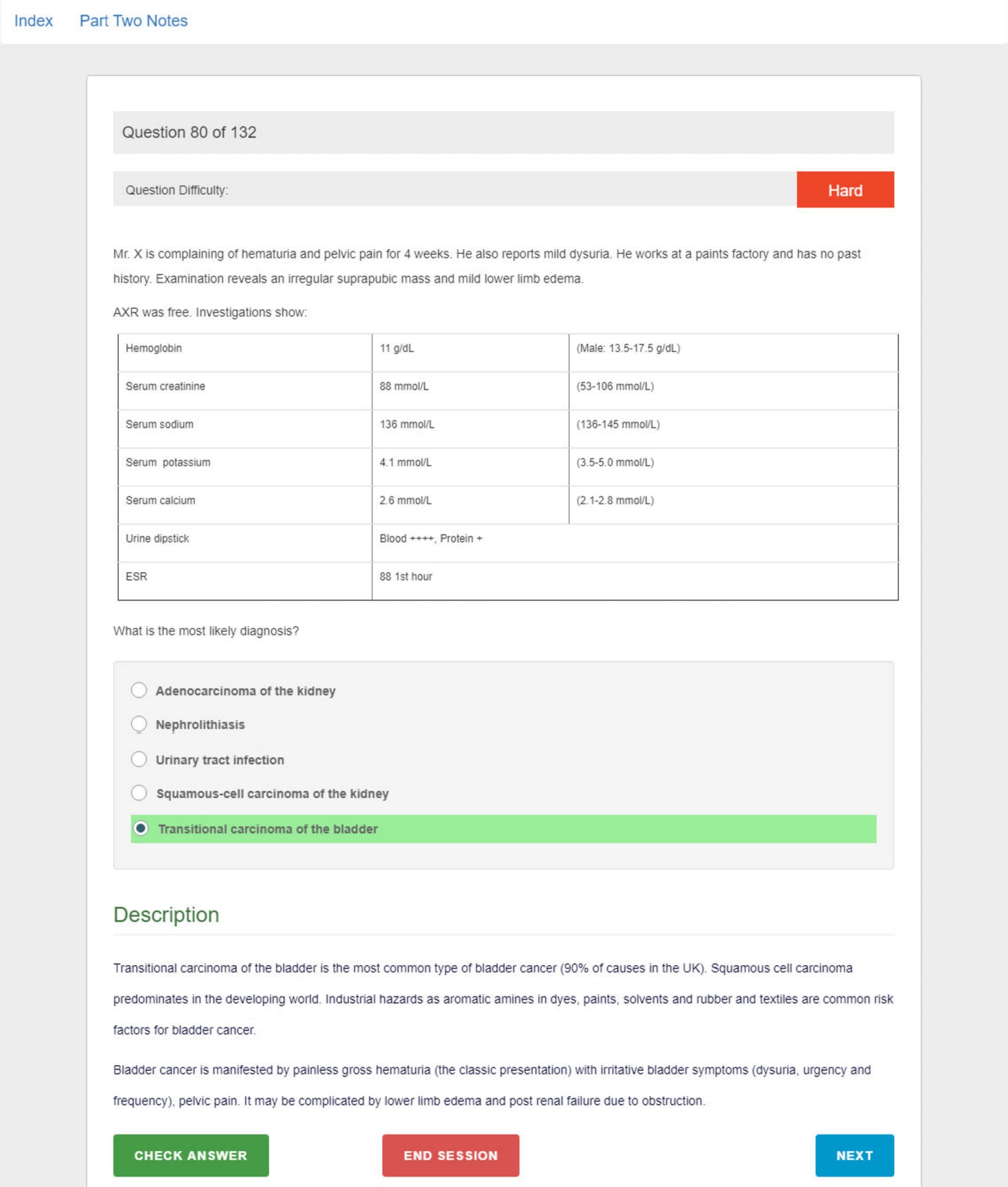
Description

Calculation of risk factors rates of contrast-induced nephropathy:

- Chronic kidney disease or diabetes or heart failure (1 risk factor) = 7%
- Patient is over 75 + 1 risk factor = 14%
- Patient is over 75 + 2 risk factor (chronic kidney disease + diabetes or heart failure) = 25%
- Patient is over 75 + 3 risk factor (chronic kidney disease + diabetes + heart failure) = 60%

Session Statistics

Answered: 78
Correct: 11
Incorrect: 67
Average Score: 14.1 %



Question 80 of 132

Question Difficulty: **Hard**

Mr. X is complaining of hematuria and pelvic pain for 4 weeks. He also reports mild dysuria. He works at a paints factory and has no past history. Examination reveals an irregular suprapubic mass and mild lower limb edema.

AXR was free. Investigations show:

Hemoglobin	11 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	88 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.6 mmol/L	(2.1-2.8 mmol/L)
Urine dipstick	Blood ++++, Protein +	
ESR	88 1st hour	

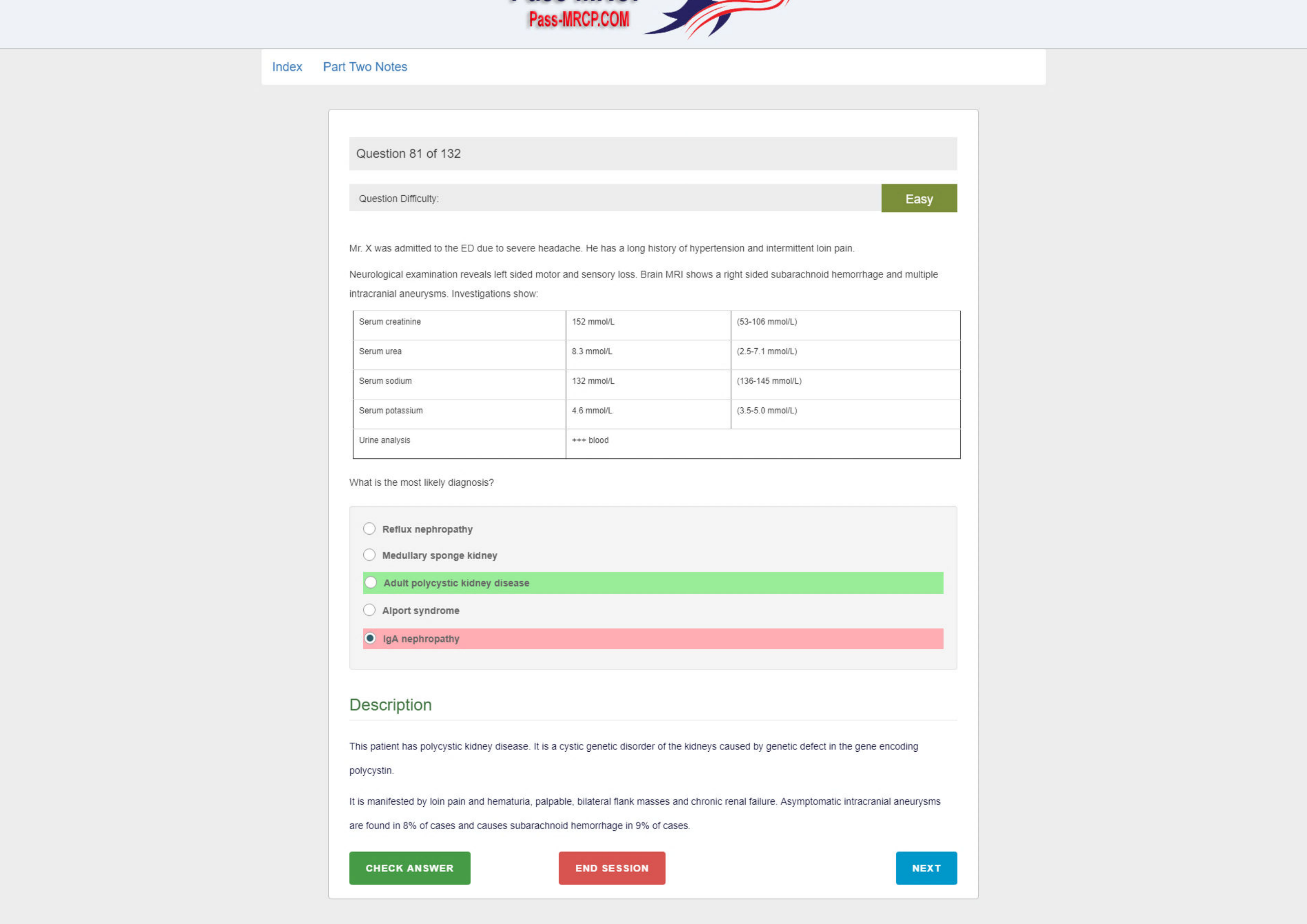
What is the most likely diagnosis?

- ○ **Adenocarcinoma of the kidney**
- ○ **Nephrolithiasis**
- ○ **Urinary tract infection**
- ○ **Squamous-cell carcinoma of the kidney**
- ● **Transitional carcinoma of the bladder**

Description

Transitional carcinoma of the bladder is the most common type of bladder cancer (90% of causes in the UK). Squamous cell carcinoma predominates in the developing world. Industrial hazards as aromatic amines in dyes, paints, solvents and rubber and textiles are common risk factors for bladder cancer.

Bladder cancer is manifested by painless gross hematuria (the classic presentation) with irritative bladder symptoms (dysuria, urgency and frequency), pelvic pain. It may be complicated by lower limb edema and post renal failure due to obstruction.



Question 81 of 132

Question Difficulty: Easy

Mr. X was admitted to the ED due to severe headache. He has a long history of hypertension and intermittent loin pain.

Neurological examination reveals left sided motor and sensory loss. Brain MRI shows a right sided subarachnoid hemorrhage and multiple intracranial aneurysms. Investigations show:

Serum creatinine	152 mmol/L	(53-106 mmol/L)
Serum urea	8.3 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	4.6 mmol/L	(3.5-5.0 mmol/L)
Urine analysis	+++ blood	

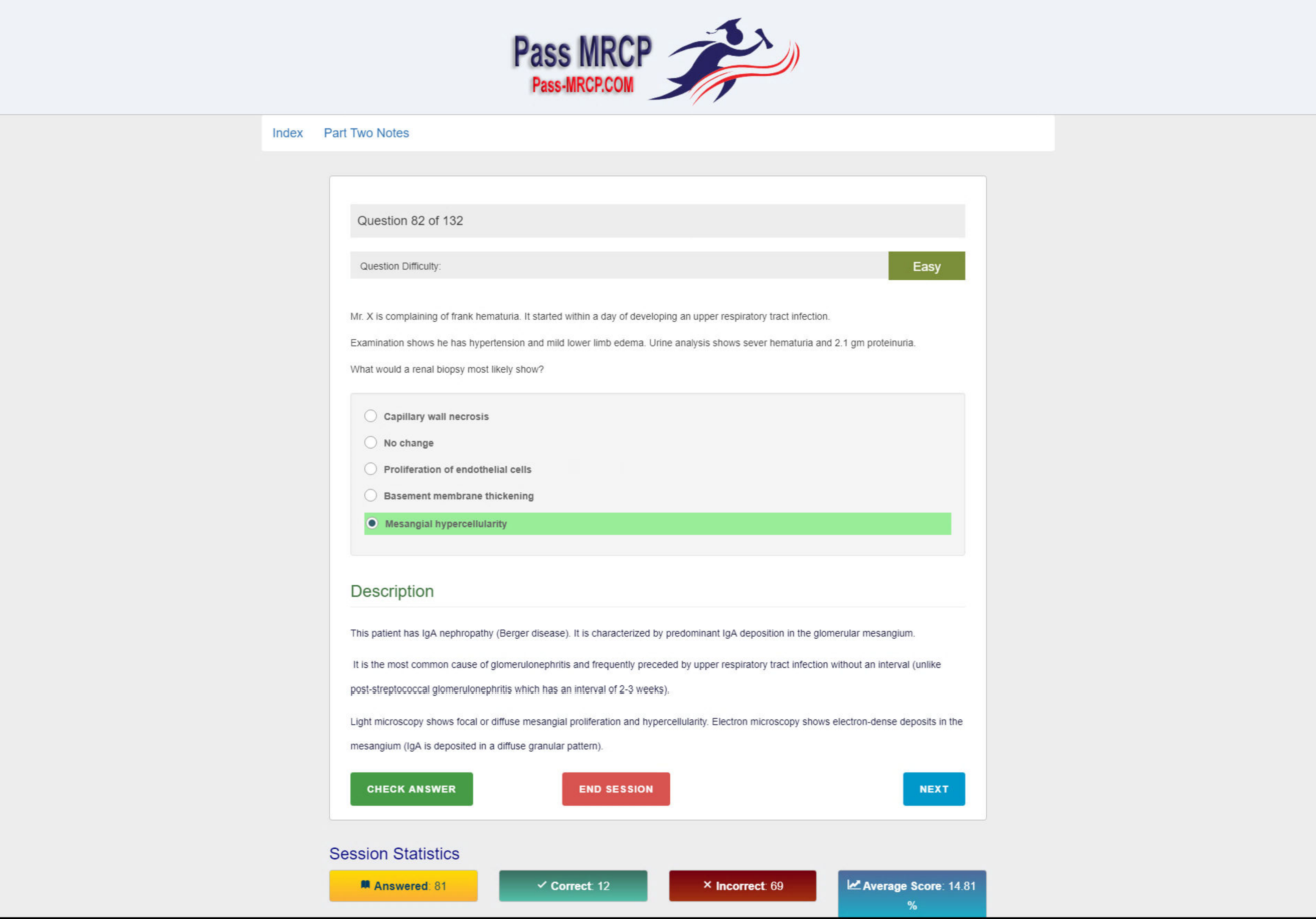
What is the most likely diagnosis?

- ○ **Reflux nephropathy**
- ○ **Medullary sponge kidney**
- ○ **Adult polycystic kidney disease**
- ○ **Alport syndrome**
- ● **IgA nephropathy**

Description

This patient has polycystic kidney disease. It is a cystic genetic disorder of the kidneys caused by genetic defect in the gene encoding polycystin.

It is manifested by loin pain and hematuria, palpable, bilateral flank masses and chronic renal failure. Asymptomatic intracranial aneurysms are found in 8% of cases and causes subarachnoid hemorrhage in 9% of cases.



Question 82 of 132

Question Difficulty: Easy

Mr. X is complaining of frank hematuria. It started within a day of developing an upper respiratory tract infection.

Examination shows he has hypertension and mild lower limb edema. Urine analysis shows sever hematuria and 2.1 gm proteinuria.

What would a renal biopsy most likely show?

- ○ Capillary wall necrosis
- ○ No change
- ○ Proliferation of endothelial cells
- ○ Basement membrane thickening
- ● Mesangial hypercellularity

Description

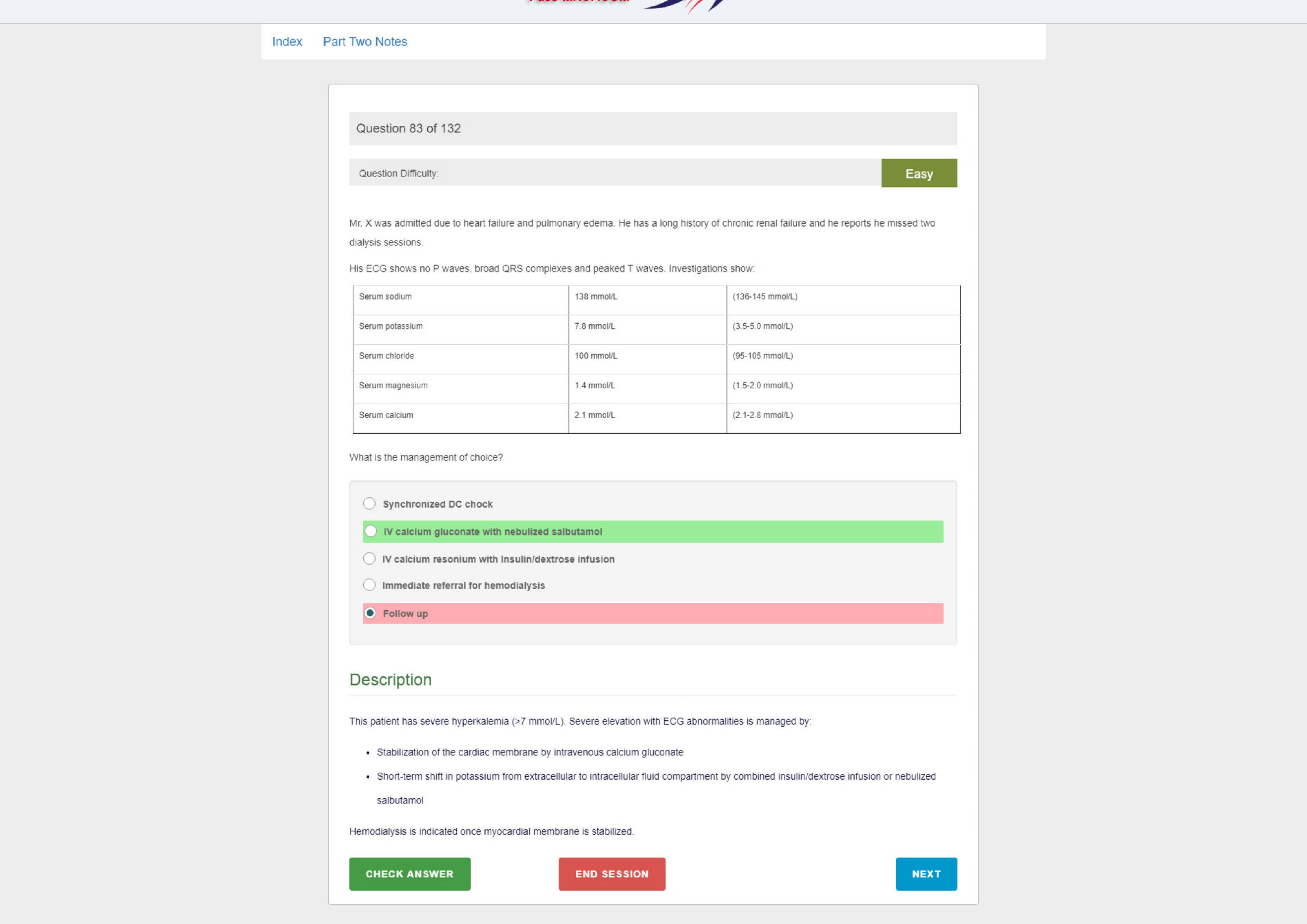
This patient has IgA nephropathy (Berger disease). It is characterized by predominant IgA deposition in the glomerular mesangium.

It is the most common cause of glomerulonephritis and frequently preceded by upper respiratory tract infection without an interval (unlike post-streptococcal glomerulonephritis which has an interval of 2-3 weeks).

Light microscopy shows focal or diffuse mesangial proliferation and hypercellularity. Electron microscopy shows electron-dense deposits in the mesangium (IgA is deposited in a diffuse granular pattern).

Session Statistics

Answered: 81
Correct: 12
Incorrect: 69
Average Score: 14.81 %



Question 83 of 132

Question Difficulty: Easy

Mr. X was admitted due to heart failure and pulmonary edema. He has a long history of chronic renal failure and he reports he missed two dialysis sessions.

His ECG shows no P waves, broad QRS complexes and peaked T waves. Investigations show:

Serum sodium	138 mmol/L	(136-145 mmol/L)
Serum potassium	7.8 mmol/L	(3.5-5.0 mmol/L)
Serum chloride	100 mmol/L	(95-105 mmol/L)
Serum magnesium	1.4 mmol/L	(1.5-2.0 mmol/L)
Serum calcium	2.1 mmol/L	(2.1-2.8 mmol/L)

What is the management of choice?

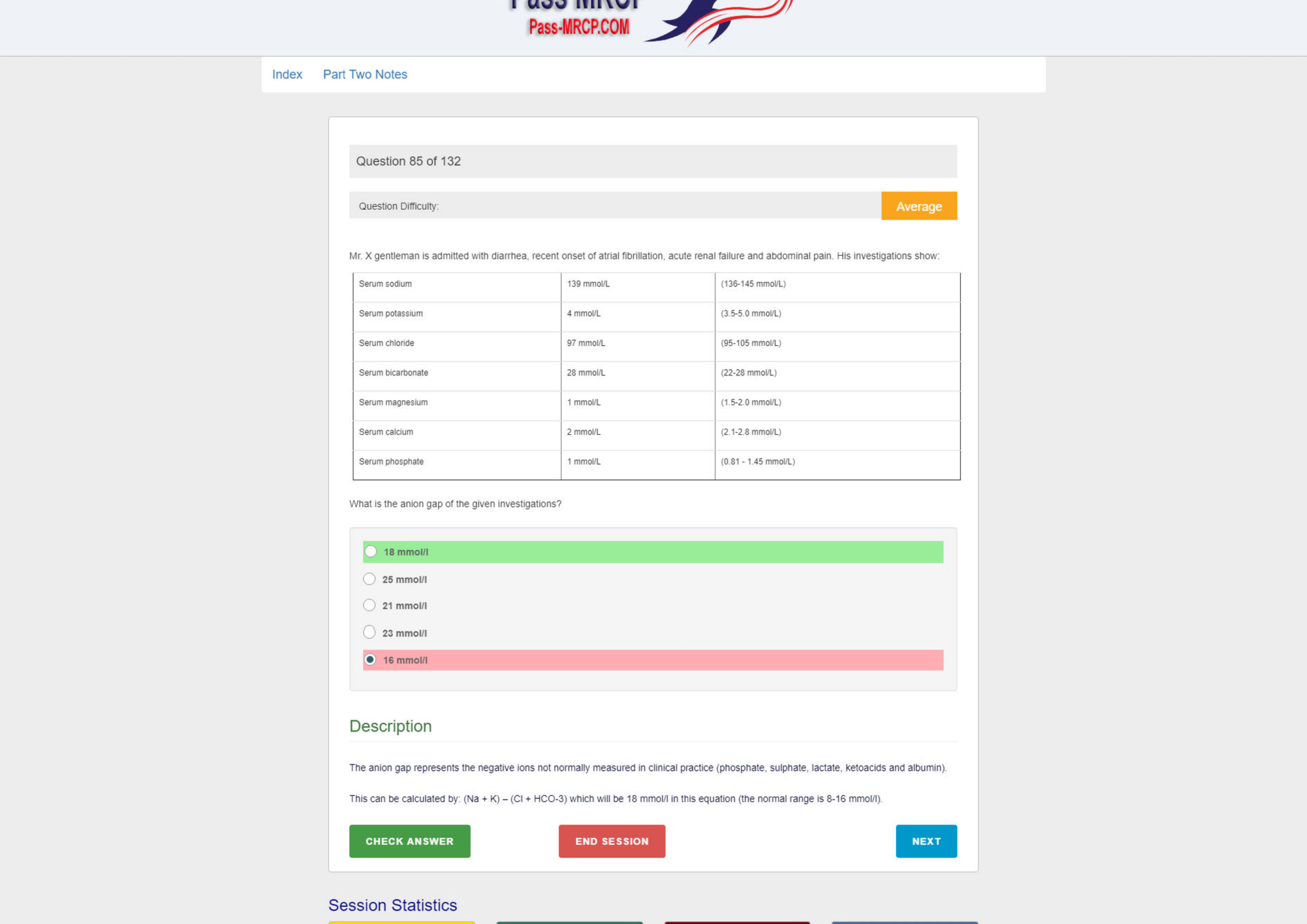
○ **Synchronized DC chock**
○ **IV calcium gluconate with nebulized salbutamol**
○ **IV calcium resonium with Insulin/dextrose infusion**
○ **Immediate referral for hemodialysis**
● **Follow up**

Description

This patient has severe hyperkalemia (>7 mmol/L). Severe elevation with ECG abnormalities is managed by:

- Stabilization of the cardiac membrane by intravenous calcium gluconate
- Short-term shift in potassium from extracellular to intracellular fluid compartment by combined insulin/dextrose infusion or nebulized salbutamol

Hemodialysis is indicated once myocardial membrane is stabilized.



Question 85 of 132

Question Difficulty: Average

Mr. X gentleman is admitted with diarrhea, recent onset of atrial fibrillation, acute renal failure and abdominal pain. His investigations show:

Serum sodium	139 mmol/L	(136-145 mmol/L)
Serum potassium	4 mmol/L	(3.5-5.0 mmol/L)
Serum chloride	97 mmol/L	(95-105 mmol/L)
Serum bicarbonate	28 mmol/L	(22-28 mmol/L)
Serum magnesium	1 mmol/L	(1.5-2.0 mmol/L)
Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
Serum phosphate	1 mmol/L	(0.81 - 1.45 mmol/L)

What is the anion gap of the given investigations?

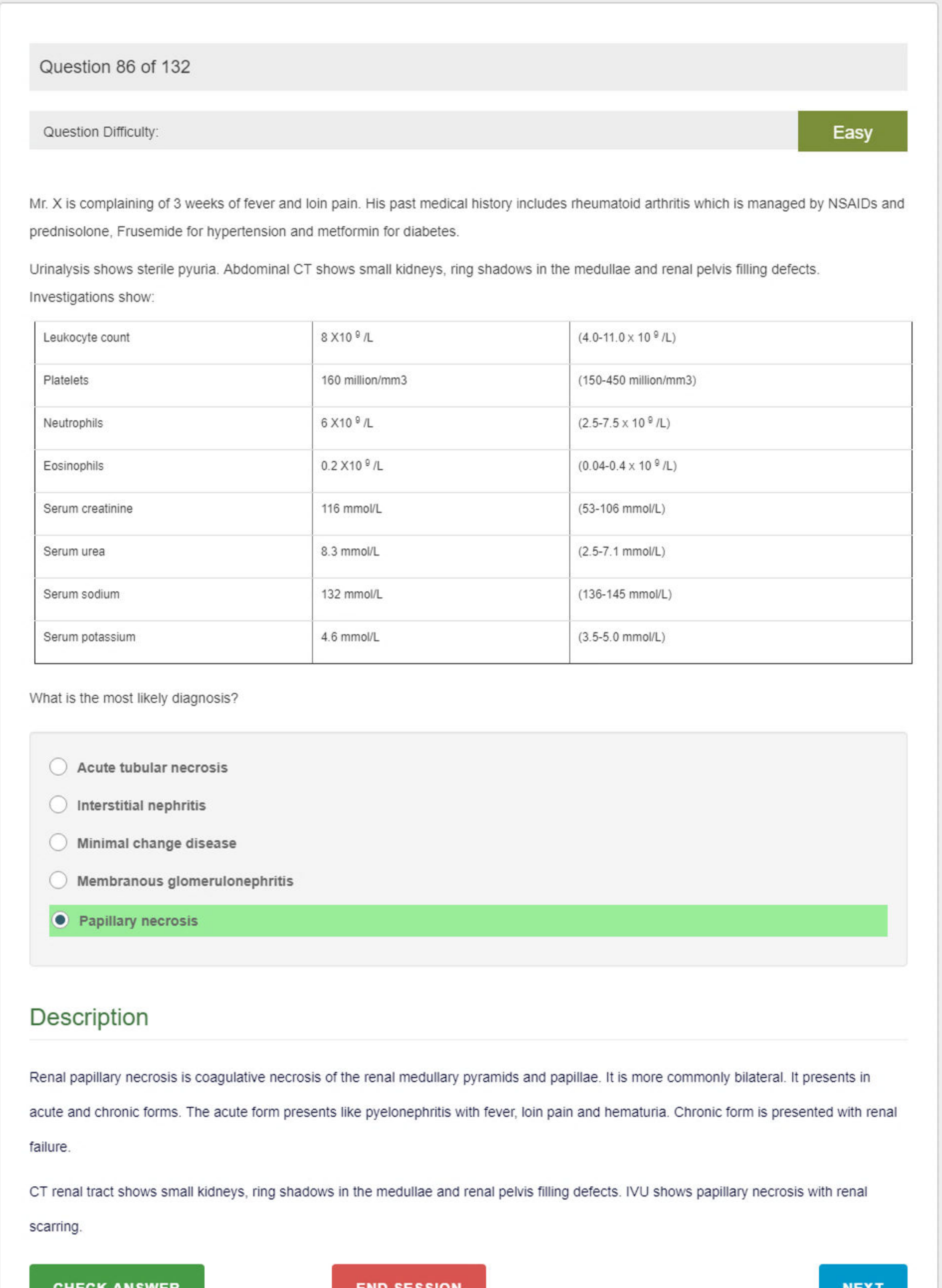
- ○ **18 mmol/l**
- ○ **25 mmol/l**
- ○ **21 mmol/l**
- ○ **23 mmol/l**
- ● **16 mmol/l**

Description

The anion gap represents the negative ions not normally measured in clinical practice (phosphate, sulphate, lactate, ketoacids and albumin).

This can be calculated by: (Na + K) – (Cl + HCO-3) which will be 18 mmol/l in this equation (the normal range is 8-16 mmol/l).

Session Statistics



Question 86 of 132

Question Difficulty: **Easy**

Mr. X is complaining of 3 weeks of fever and loin pain. His past medical history includes rheumatoid arthritis which is managed by NSAIDs and prednisolone, Frusemide for hypertension and metformin for diabetes.

Urinalysis shows sterile pyuria. Abdominal CT shows small kidneys, ring shadows in the medullae and renal pelvis filling defects.

Investigations show:

Leukocyte count	8 X10 ^{9} /L	(4.0-11.0 x 10 ^{9} /L)
Platelets	160 million/mm3	(150-450 million/mm3)
Neutrophils	6 X10 ^{9} /L	(2.5-7.5 x 10 ^{9} /L)
Eosinophils	0.2 X10 ^{9} /L	(0.04-0.4 x 10 ^{9} /L)
Serum creatinine	116 mmol/L	(53-106 mmol/L)
Serum urea	8.3 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	4.6 mmol/L	(3.5-5.0 mmol/L)

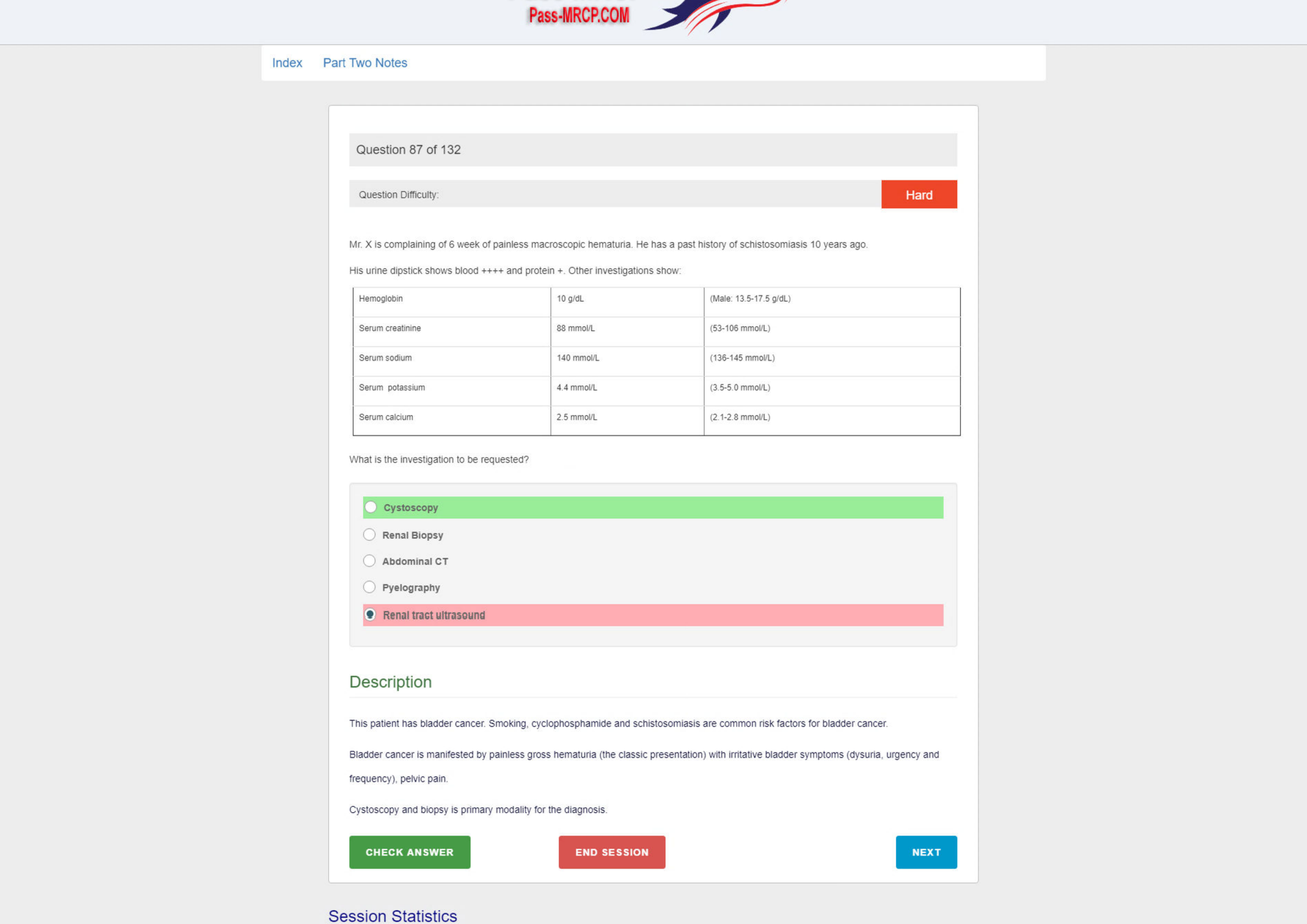
What is the most likely diagnosis?

- ○ **Acute tubular necrosis**
- ○ **Interstitial nephritis**
- ○ **Minimal change disease**
- ○ **Membranous glomerulonephritis**
- ● **Papillary necrosis**

Description

Renal papillary necrosis is coagulative necrosis of the renal medullary pyramids and papillae. It is more commonly bilateral. It presents in acute and chronic forms. The acute form presents like pyelonephritis with fever, loin pain and hematuria. Chronic form is presented with renal failure.

CT renal tract shows small kidneys, ring shadows in the medullae and renal pelvis filling defects. IVU shows papillary necrosis with renal scarring.



Question 87 of 132

Question Difficulty: **Hard**

Mr. X is complaining of 6 week of painless macroscopic hematuria. He has a past history of schistosomiasis 10 years ago.

His urine dipstick shows blood ++++ and protein +. Other investigations show:

Hemoglobin	10 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	88 mmol/L	(53-106 mmol/L)
Serum sodium	140 mmol/L	(136-145 mmol/L)
Serum potassium	4.4 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.5 mmol/L	(2.1-2.8 mmol/L)

What is the investigation to be requested?

- ○ **Cystoscopy**
- ○ **Renal Biopsy**
- ○ **Abdominal CT**
- ○ **Pyelography**
- ● **Renal tract ultrasound**

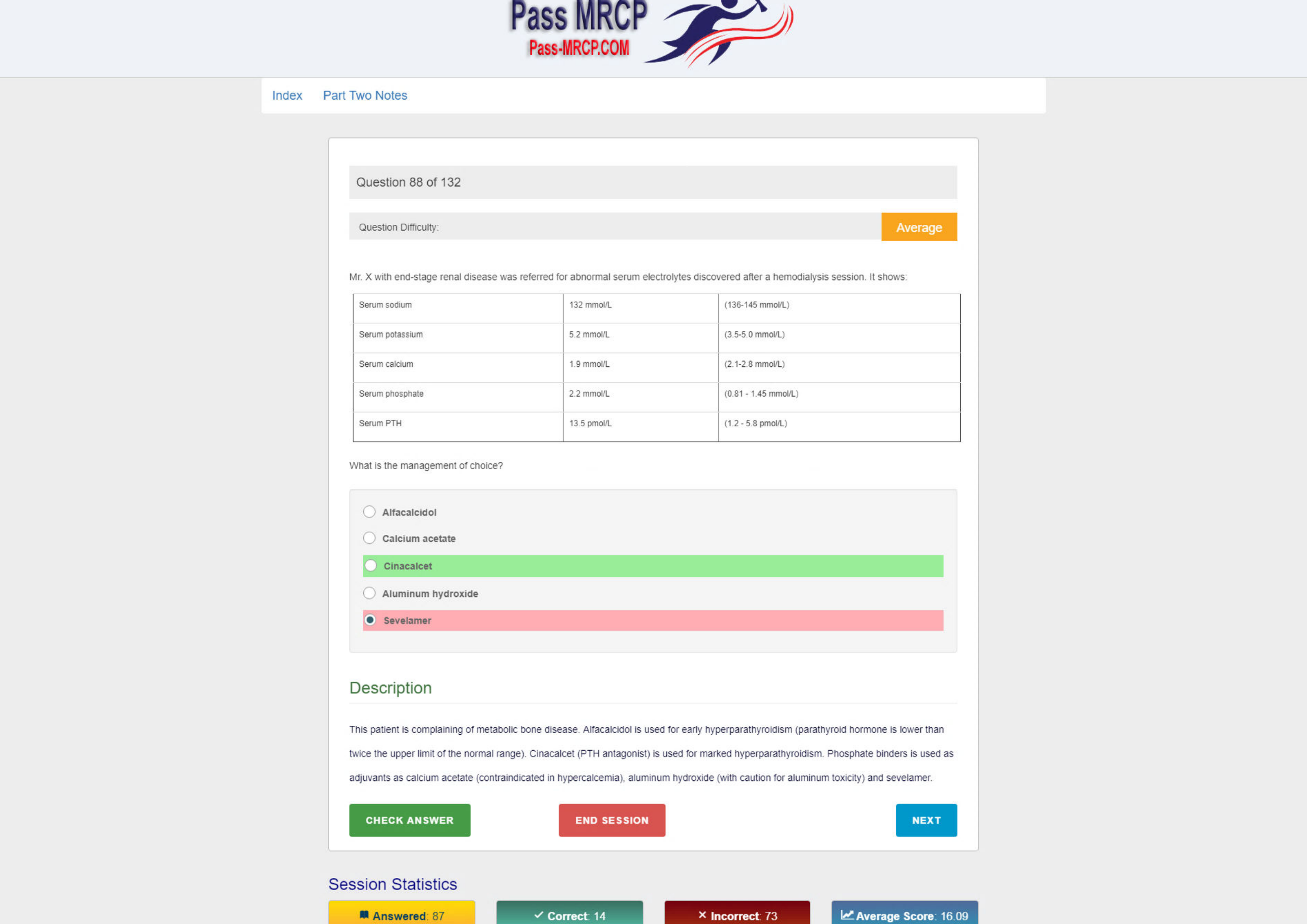
Description

This patient has bladder cancer. Smoking, cyclophosphamide and schistosomiasis are common risk factors for bladder cancer.

Bladder cancer is manifested by painless gross hematuria (the classic presentation) with irritative bladder symptoms (dysuria, urgency and frequency), pelvic pain.

Cystoscopy and biopsy is primary modality for the diagnosis.

Session Statistics



Question 88 of 132

Question Difficulty: Average

Mr. X with end-stage renal disease was referred for abnormal serum electrolytes discovered after a hemodialysis session. It shows:

Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	5.2 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.9 mmol/L	(2.1-2.8 mmol/L)
Serum phosphate	2.2 mmol/L	(0.81 - 1.45 mmol/L)
Serum PTH	13.5 pmol/L	(1.2 - 5.8 pmol/L)

What is the management of choice?

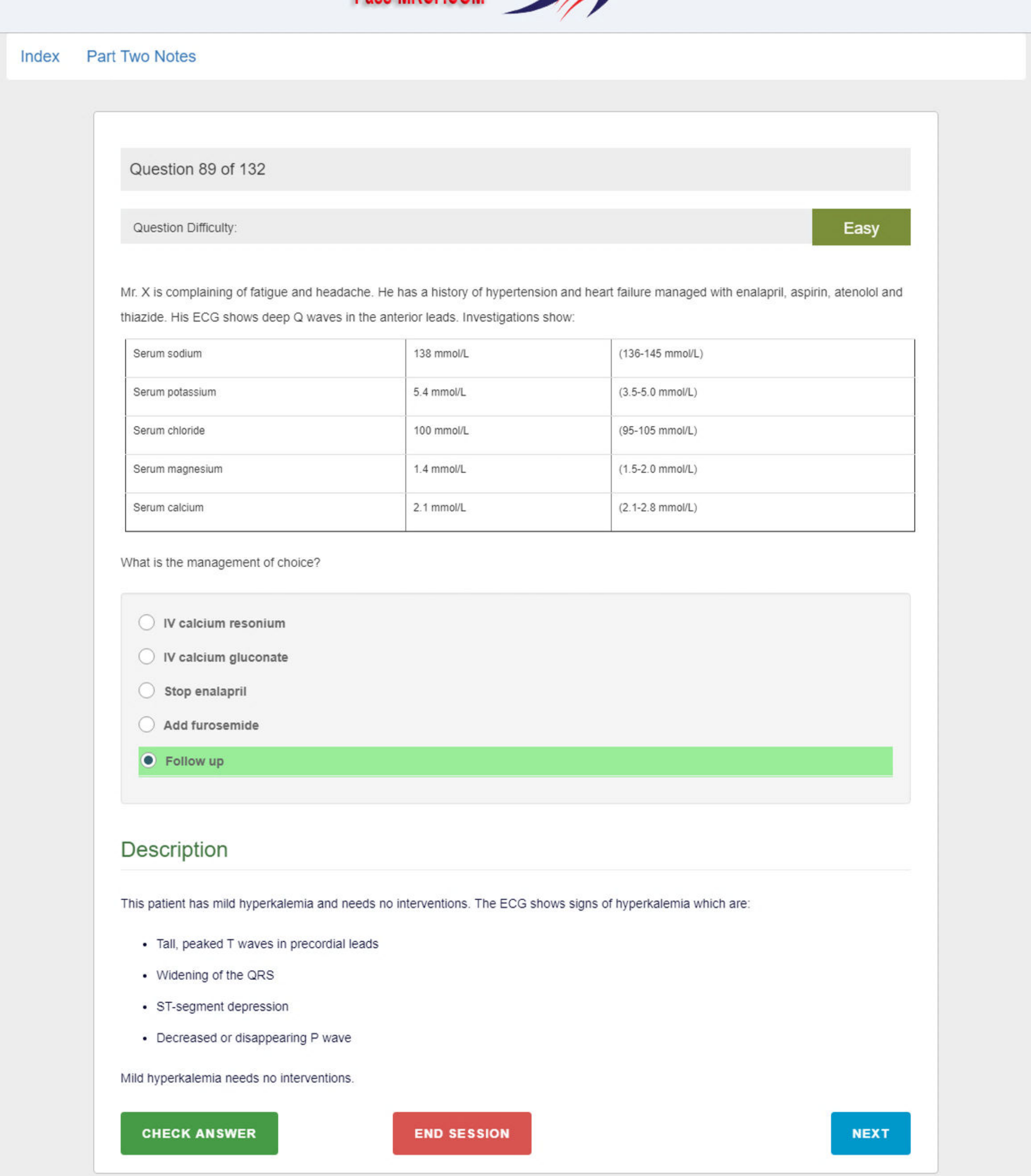
○ **Alfacalcidol**
○ **Calcium acetate**
○ **Cinacalcet** 🟩
○ **Aluminum hydroxide**
● **Sevelamer** 🟥

Description

This patient is complaining of metabolic bone disease. Alfacalcidol is used for early hyperparathyroidism (parathyroid hormone is lower than twice the upper limit of the normal range). Cinacalcet (PTH antagonist) is used for marked hyperparathyroidism. Phosphate binders is used as adjuvants as calcium acetate (contraindicated in hypercalcemia), aluminum hydroxide (with caution for aluminum toxicity) and sevelamer.

Session Statistics

Answered: 87 ✓ **Correct**: 14 ✕ **Incorrect**: 73 **Average Score**: 16.09



Question 89 of 132

Question Difficulty: **Easy**

Mr. X is complaining of fatigue and headache. He has a history of hypertension and heart failure managed with enalapril, aspirin, atenolol and thiazide. His ECG shows deep Q waves in the anterior leads. Investigations show:

Serum sodium	138 mmol/L	(136-145 mmol/L)
Serum potassium	5.4 mmol/L	(3.5-5.0 mmol/L)
Serum chloride	100 mmol/L	(95-105 mmol/L)
Serum magnesium	1.4 mmol/L	(1.5-2.0 mmol/L)
Serum calcium	2.1 mmol/L	(2.1-2.8 mmol/L)

What is the management of choice?

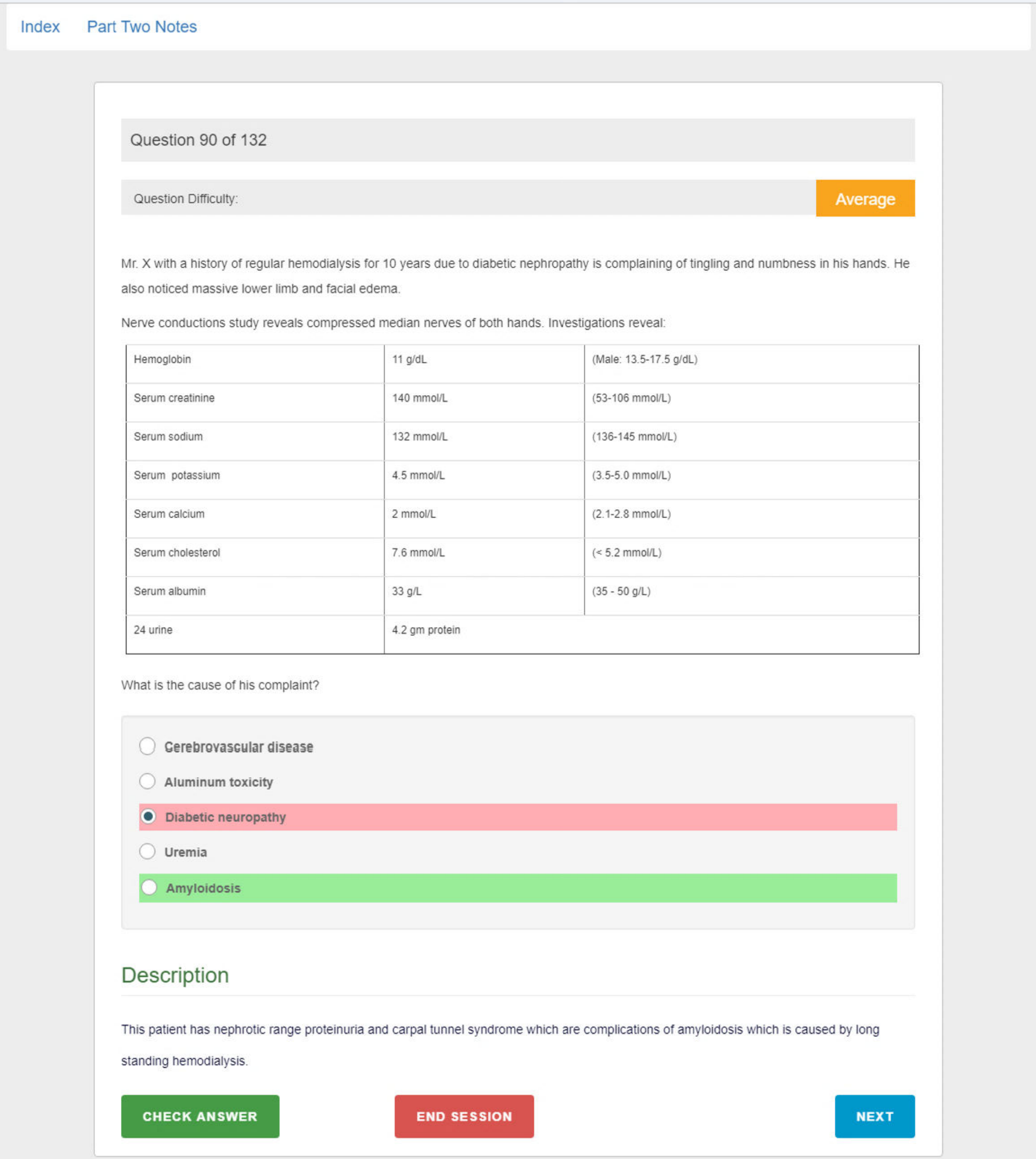
○ **IV calcium resonium**
○ **IV calcium gluconate**
○ **Stop enalapril**
○ **Add furosemide**
● **Follow up**

Description

This patient has mild hyperkalemia and needs no interventions. The ECG shows signs of hyperkalemia which are:

- Tall, peaked T waves in precordial leads
- Widening of the QRS
- ST-segment depression
- Decreased or disappearing P wave

Mild hyperkalemia needs no interventions.



Question 90 of 132

Question Difficulty: Average

Mr. X with a history of regular hemodialysis for 10 years due to diabetic nephropathy is complaining of tingling and numbness in his hands. He also noticed massive lower limb and facial edema.

Nerve conductions study reveals compressed median nerves of both hands. Investigations reveal:

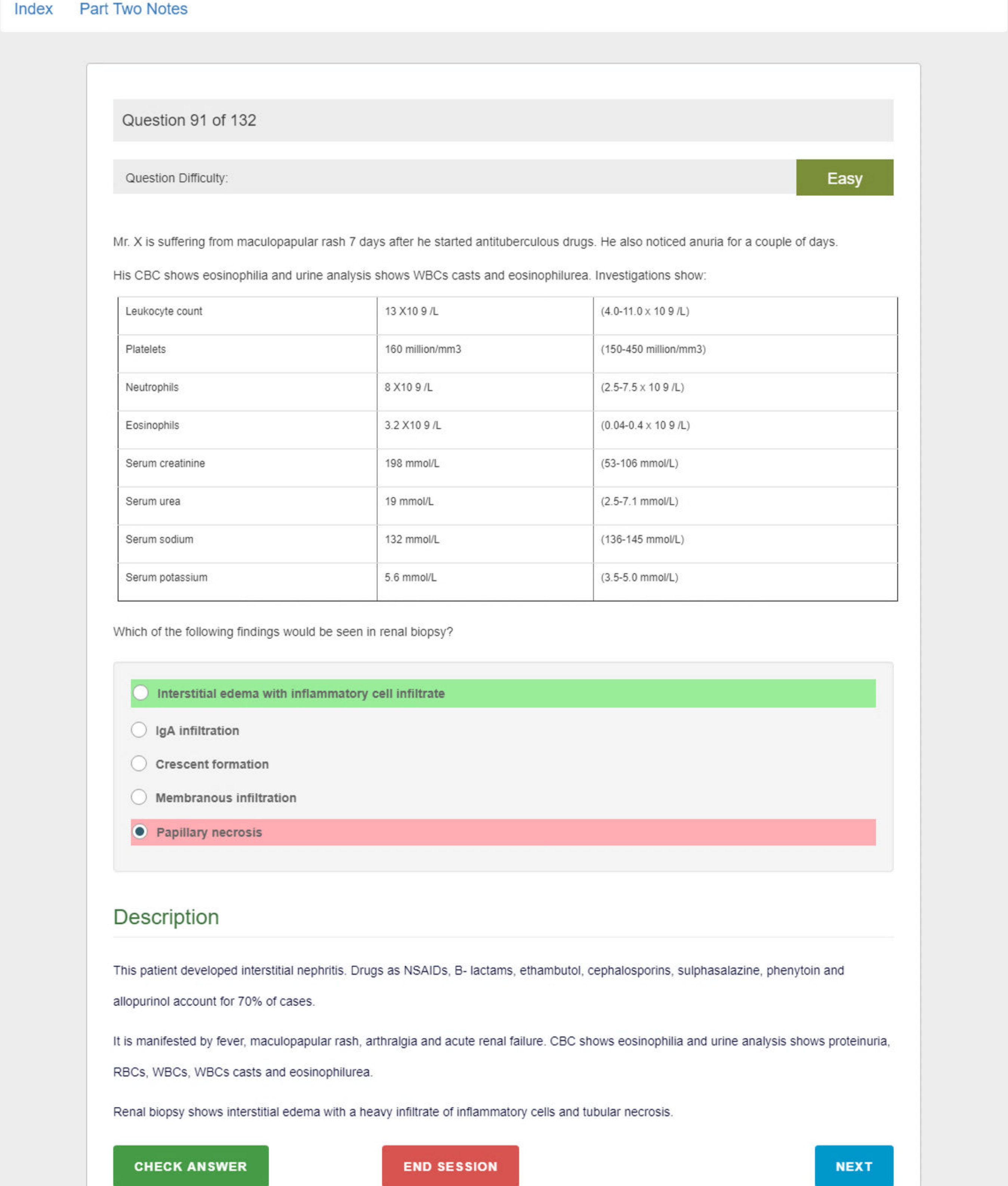
Hemoglobin	11 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	140 mmol/L	(53-106 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	7.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	33 g/L	(35 - 50 g/L)
24 urine	4.2 gm protein	

What is the cause of his complaint?

- ○ Cerebrovascular disease
- ○ Aluminum toxicity
- ● Diabetic neuropathy
- ○ Uremia
- ○ Amyloidosis

Description

This patient has nephrotic range proteinuria and carpal tunnel syndrome which are complications of amyloidosis which is caused by long standing hemodialysis.



Question 91 of 132

Question Difficulty: Easy

Mr. X is suffering from maculopapular rash 7 days after he started antituberculous drugs. He also noticed anuria for a couple of days.

His CBC shows eosinophilia and urine analysis shows WBCs casts and eosinophilurea. Investigations show:

Leukocyte count	13 X10 9 /L	(4.0-11.0 x 10 9 /L)
Platelets	160 million/mm3	(150-450 million/mm3)
Neutrophils	8 X10 9 /L	(2.5-7.5 x 10 9 /L)
Eosinophils	3.2 X10 9 /L	(0.04-0.4 x 10 9 /L)
Serum creatinine	198 mmol/L	(53-106 mmol/L)
Serum urea	19 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	5.6 mmol/L	(3.5-5.0 mmol/L)

Which of the following findings would be seen in renal biopsy?

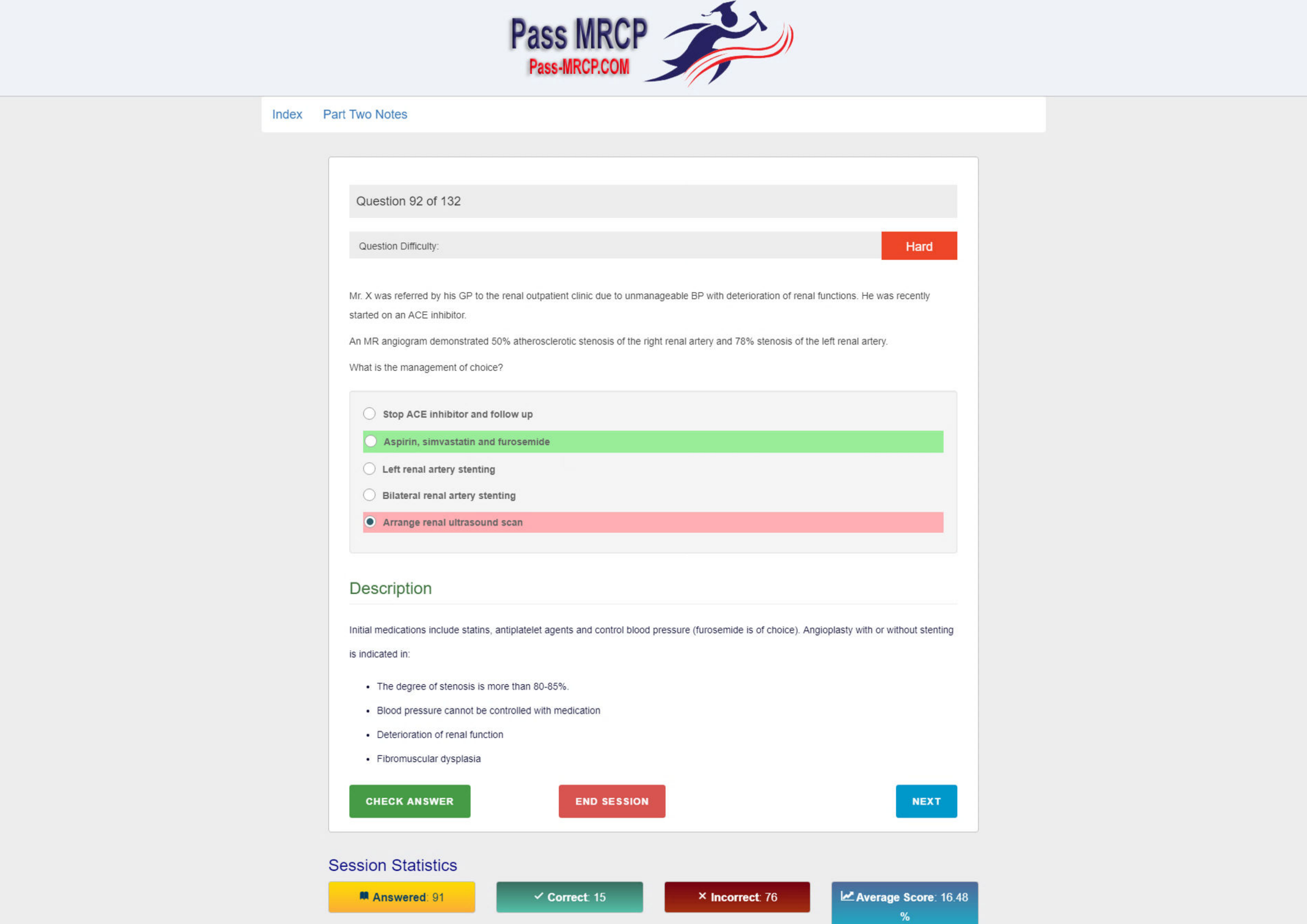
- ○ **Interstitial edema with inflammatory cell infiltrate**
- ○ **IgA infiltration**
- ○ **Crescent formation**
- ○ **Membranous infiltration**
- ● **Papillary necrosis**

Description

This patient developed interstitial nephritis. Drugs as NSAIDs, B- lactams, ethambutol, cephalosporins, sulphasalazine, phenytoin and allopurinol account for 70% of cases.

It is manifested by fever, maculopapular rash, arthralgia and acute renal failure. CBC shows eosinophilia and urine analysis shows proteinuria, RBCs, WBCs, WBCs casts and eosinophilurea.

Renal biopsy shows interstitial edema with a heavy infiltrate of inflammatory cells and tubular necrosis.



Question 92 of 132

Question Difficulty: **Hard**

Mr. X was referred by his GP to the renal outpatient clinic due to unmanageable BP with deterioration of renal functions. He was recently started on an ACE inhibitor.

An MR angiogram demonstrated 50% atherosclerotic stenosis of the right renal artery and 78% stenosis of the left renal artery.

What is the management of choice?

○ **Stop ACE inhibitor and follow up**

○ **Aspirin, simvastatin and furosemide**

○ **Left renal artery stenting**

○ **Bilateral renal artery stenting**

● **Arrange renal ultrasound scan**

Description

Initial medications include statins, antiplatelet agents and control blood pressure (furosemide is of choice). Angioplasty with or without stenting is indicated in:

- The degree of stenosis is more than 80-85%.
- Blood pressure cannot be controlled with medication
- Deterioration of renal function
- Fibromuscular dysplasia

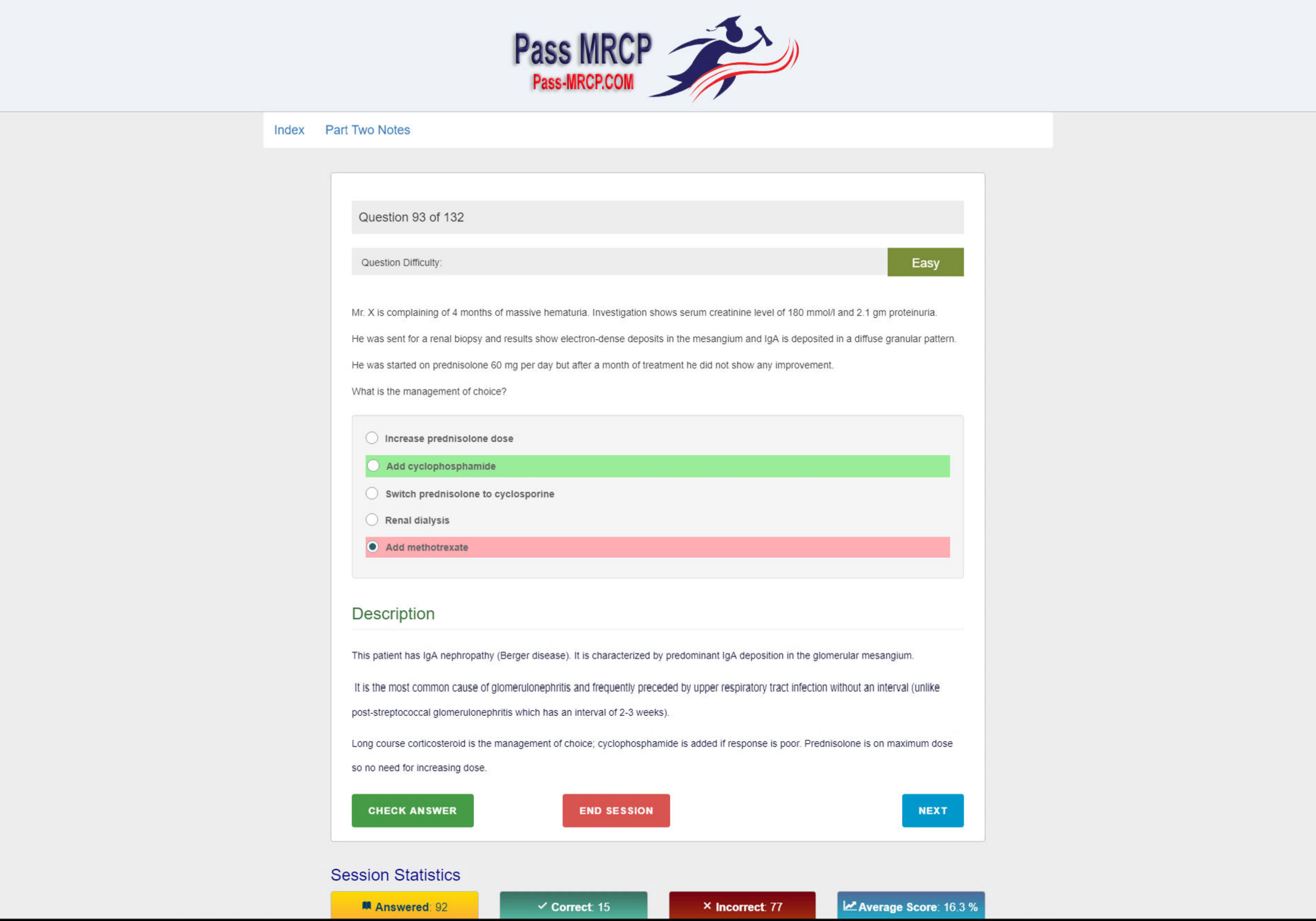
Session Statistics

Answered: 91

✓ **Correct**: 15

× **Incorrect**: 76

Average Score: 16.48 %



Question 93 of 132

Question Difficulty: Easy

Mr. X is complaining of 4 months of massive hematuria. Investigation shows serum creatinine level of 180 mmol/l and 2.1 gm proteinuria.

He was sent for a renal biopsy and results show electron-dense deposits in the mesangium and IgA is deposited in a diffuse granular pattern.

He was started on prednisolone 60 mg per day but after a month of treatment he did not show any improvement.

What is the management of choice?

- ○ Increase prednisolone dose
- ○ Add cyclophosphamide
- ○ Switch prednisolone to cyclosporine
- ○ Renal dialysis
- ● Add methotrexate

Description

This patient has IgA nephropathy (Berger disease). It is characterized by predominant IgA deposition in the glomerular mesangium.

It is the most common cause of glomerulonephritis and frequently preceded by upper respiratory tract infection without an interval (unlike post-streptococcal glomerulonephritis which has an interval of 2-3 weeks).

Long course corticosteroid is the management of choice; cyclophosphamide is added if response is poor. Prednisolone is on maximum dose so no need for increasing dose.

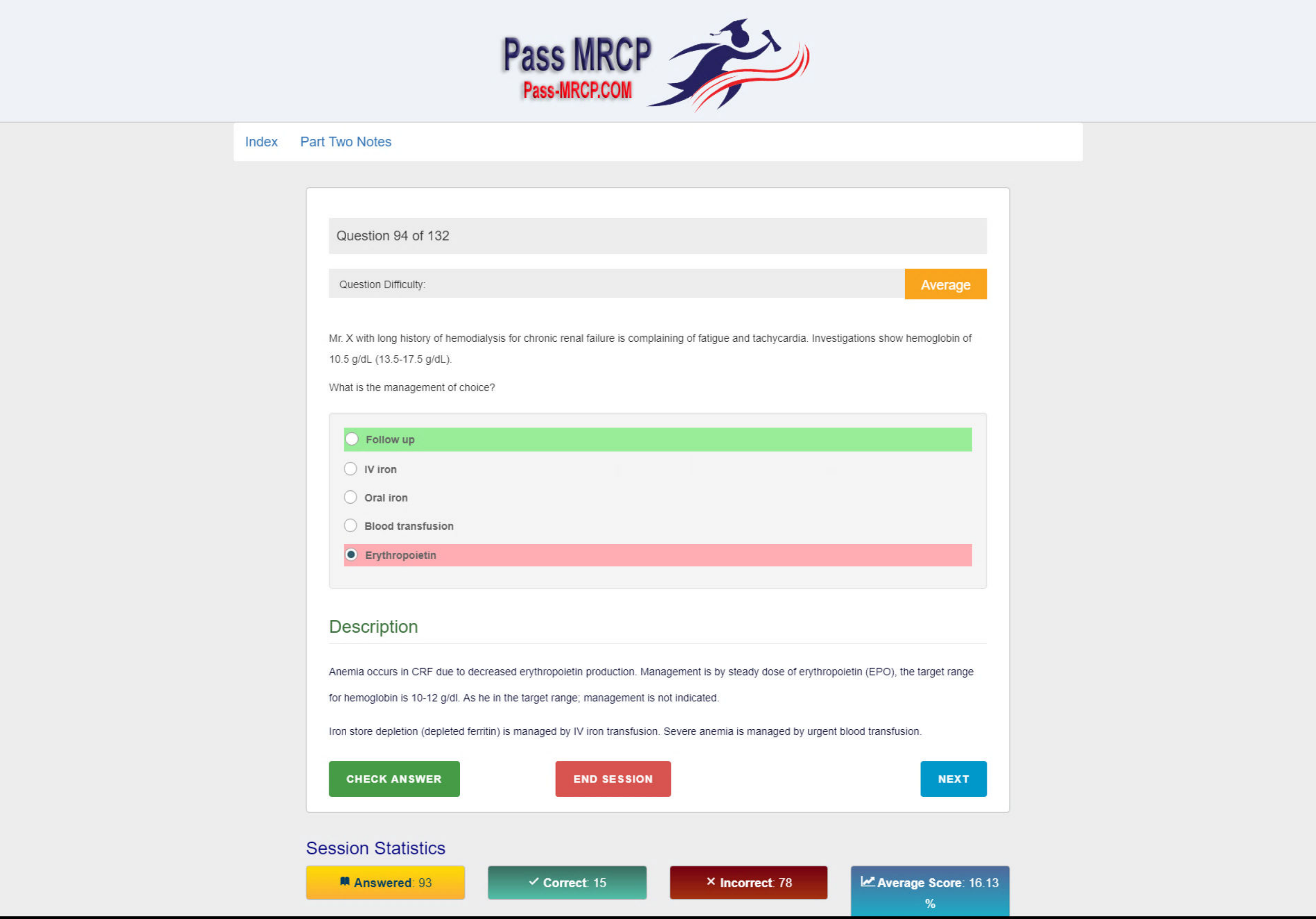
Session Statistics

Answered: 92

✓ Correct: 15

✕ Incorrect: 77

Average Score: 16.3 %



Question 94 of 132

Question Difficulty: Average

Mr. X with long history of hemodialysis for chronic renal failure is complaining of fatigue and tachycardia. Investigations show hemoglobin of 10.5 g/dL (13.5-17.5 g/dL).

What is the management of choice?

- ○ Follow up
- ○ IV iron
- ○ Oral iron
- ○ Blood transfusion
- ● Erythropoietin

Description

Anemia occurs in CRF due to decreased erythropoietin production. Management is by steady dose of erythropoietin (EPO), the target range for hemoglobin is 10-12 g/dl. As he in the target range; management is not indicated.

Iron store depletion (depleted ferritin) is managed by IV iron transfusion. Severe anemia is managed by urgent blood transfusion.

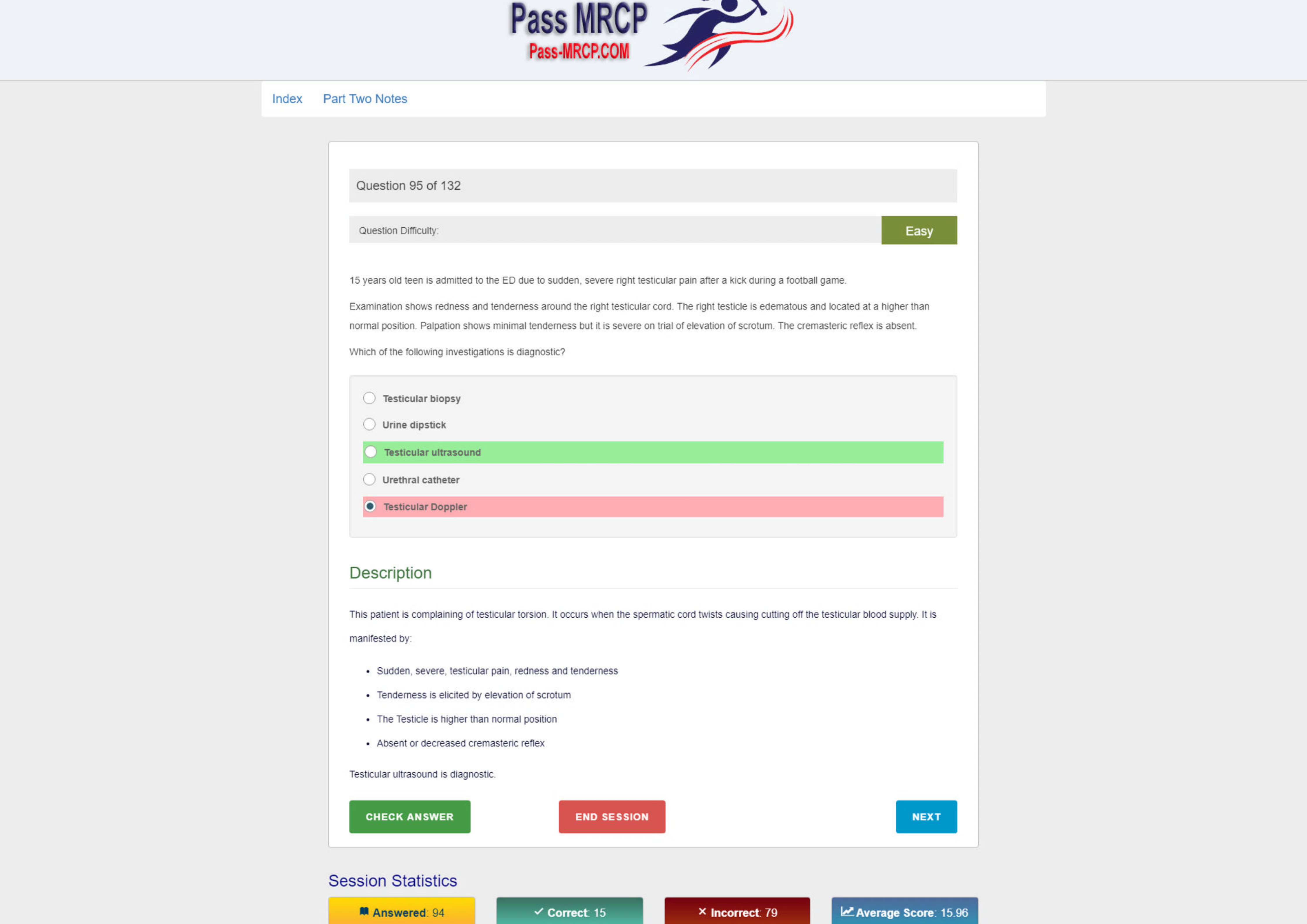
Session Statistics

Answered: 93

✓ Correct: 15

✕ Incorrect: 78

Average Score: 16.13 %



Question 95 of 132

Question Difficulty: **Easy**

15 years old teen is admitted to the ED due to sudden, severe right testicular pain after a kick during a football game.

Examination shows redness and tenderness around the right testicular cord. The right testicle is edematous and located at a higher than normal position. Palpation shows minimal tenderness but it is severe on trial of elevation of scrotum. The cremasteric reflex is absent.

Which of the following investigations is diagnostic?

○ **Testicular biopsy**
○ **Urine dipstick**
○ **Testicular ultrasound**
○ **Urethral catheter**
● **Testicular Doppler**

Description

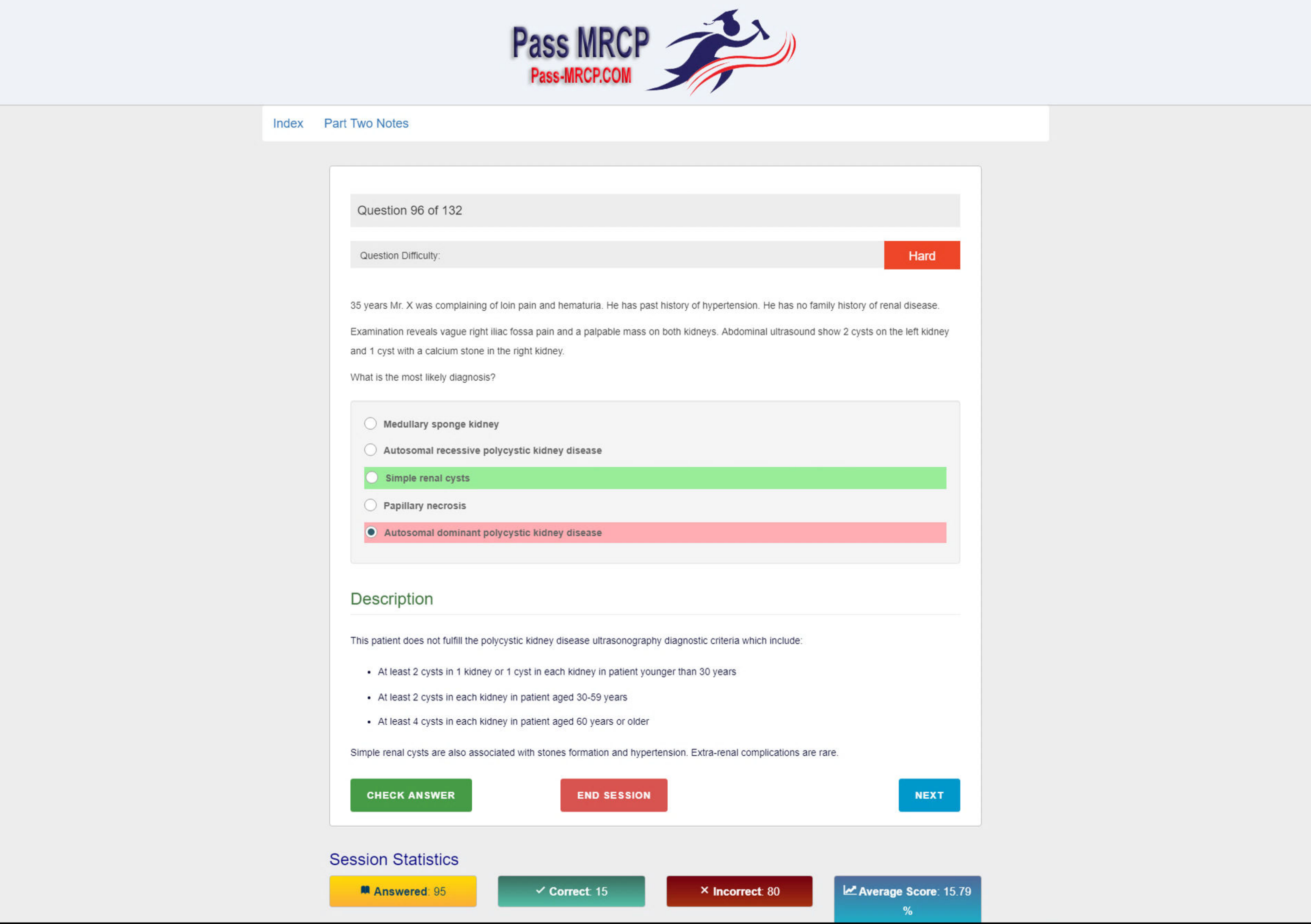
This patient is complaining of testicular torsion. It occurs when the spermatic cord twists causing cutting off the testicular blood supply. It is manifested by:

- Sudden, severe, testicular pain, redness and tenderness
- Tenderness is elicited by elevation of scrotum
- The Testicle is higher than normal position
- Absent or decreased cremasteric reflex

Testicular ultrasound is diagnostic.

Session Statistics

Answered: 94
✓ **Correct**: 15
✕ **Incorrect**: 79
Average Score: 15.96



Question 96 of 132

Question Difficulty: **Hard**

35 years Mr. X was complaining of loin pain and hematuria. He has past history of hypertension. He has no family history of renal disease.

Examination reveals vague right iliac fossa pain and a palpable mass on both kidneys. Abdominal ultrasound show 2 cysts on the left kidney and 1 cyst with a calcium stone in the right kidney.

What is the most likely diagnosis?

○ **Medullary sponge kidney**
○ **Autosomal recessive polycystic kidney disease**
○ **Simple renal cysts**
○ **Papillary necrosis**
● **Autosomal dominant polycystic kidney disease**

Description

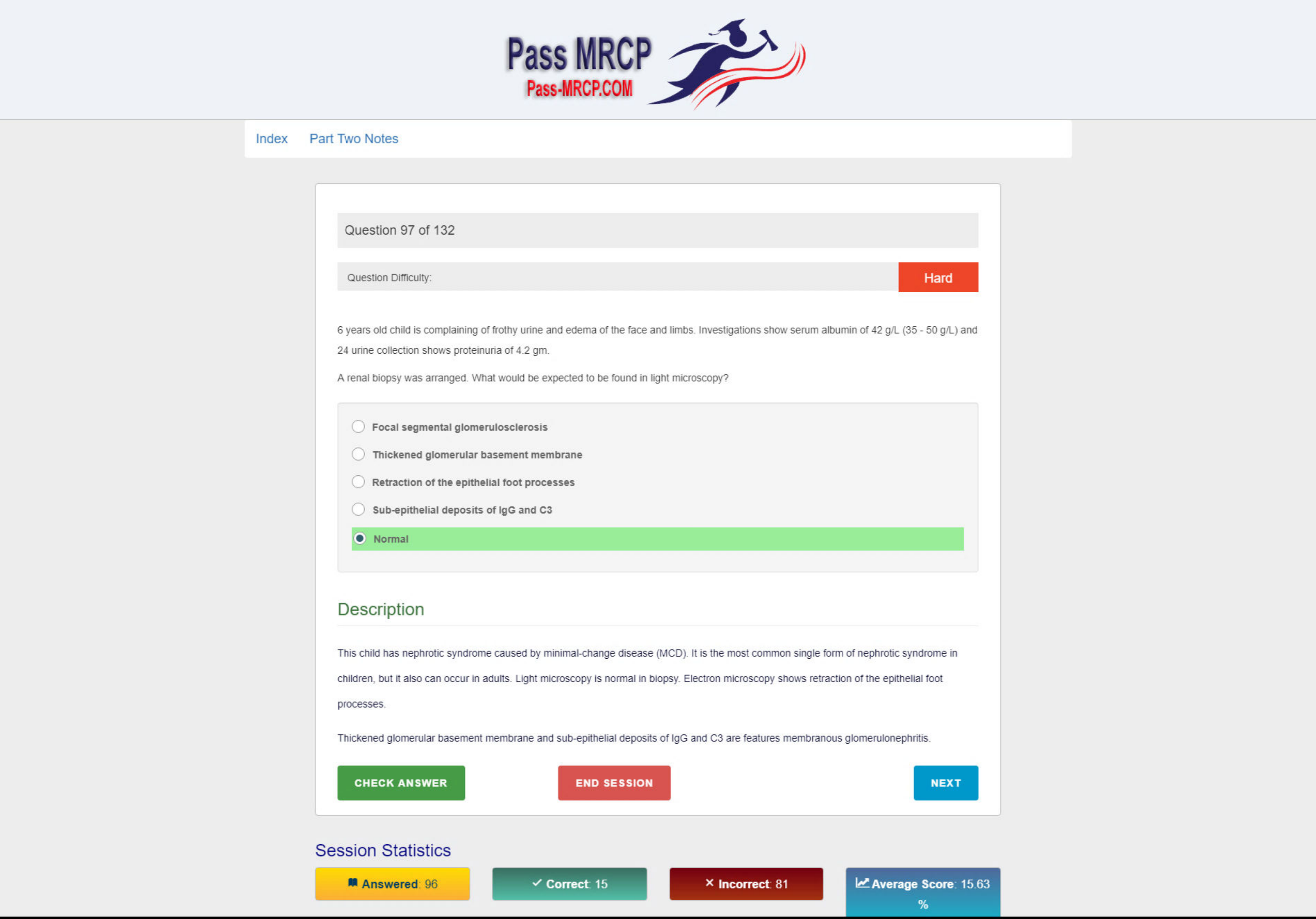
This patient does not fulfill the polycystic kidney disease ultrasonography diagnostic criteria which include:

- At least 2 cysts in 1 kidney or 1 cyst in each kidney in patient younger than 30 years
- At least 2 cysts in each kidney in patient aged 30-59 years
- At least 4 cysts in each kidney in patient aged 60 years or older

Simple renal cysts are also associated with stones formation and hypertension. Extra-renal complications are rare.

Session Statistics

Answered: 95
✓ **Correct**: 15
× **Incorrect**: 80
Average Score: 15.79 %



Question 97 of 132

Question Difficulty: Hard

6 years old child is complaining of frothy urine and edema of the face and limbs. Investigations show serum albumin of 42 g/L (35 - 50 g/L) and 24 urine collection shows proteinuria of 4.2 gm.

A renal biopsy was arranged. What would be expected to be found in light microscopy?

- ○ **Focal segmental glomerulosclerosis**
- ○ **Thickened glomerular basement membrane**
- ○ **Retraction of the epithelial foot processes**
- ○ **Sub-epithelial deposits of IgG and C3**
- ● **Normal**

Description

This child has nephrotic syndrome caused by minimal-change disease (MCD). It is the most common single form of nephrotic syndrome in children, but it also can occur in adults. Light microscopy is normal in biopsy. Electron microscopy shows retraction of the epithelial foot processes.

Thickened glomerular basement membrane and sub-epithelial deposits of IgG and C3 are features membranous glomerulonephritis.

Session Statistics

Answered: 96

✓ Correct: 15

✕ Incorrect: 81

Average Score: 15.63 %

Question 98 of 132

Question Difficulty: **Average**

Mr. X is complaining of a mass in his right testicle. He reports has a history of a trauma to his right testicle 8 months ago. Examination reveals a small hydrocele and a palpable lump.

Investigations show:

Hemoglobin	14 g/dL	(13.5-17.5 g/dL)
Serum creatinine	89 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.4 mmol/L	(2.1-2.8 mmol/L)
PSA	1.2 ng/mL	(2.5 ng/mL)
AFP	200 ng/ml	(< 500 ng/ml)
Beta HCG	1.8 IU/L	(< 0.8 IU/L)
ESR	66 1st hour	

What is the most likely diagnosis?

Serum calcium	2.4 mmol/L	(2.1-2.8 mmol/L)
PSA	1.2 ng/mL	(2.5 ng/mL)
AFP	200 ng/ml	(< 500 ng/ml)
Beta HCG	1.8 IU/L	(< 0.8 IU/L)
ESR	66 1st hour	

What is the most likely diagnosis?

○ **Prostatic cancer**
○ **Testicular seminoma**
● **Renal cell carcinoma**
○ **Testicular teratoma**
○ **Testicular Torsion**

Description

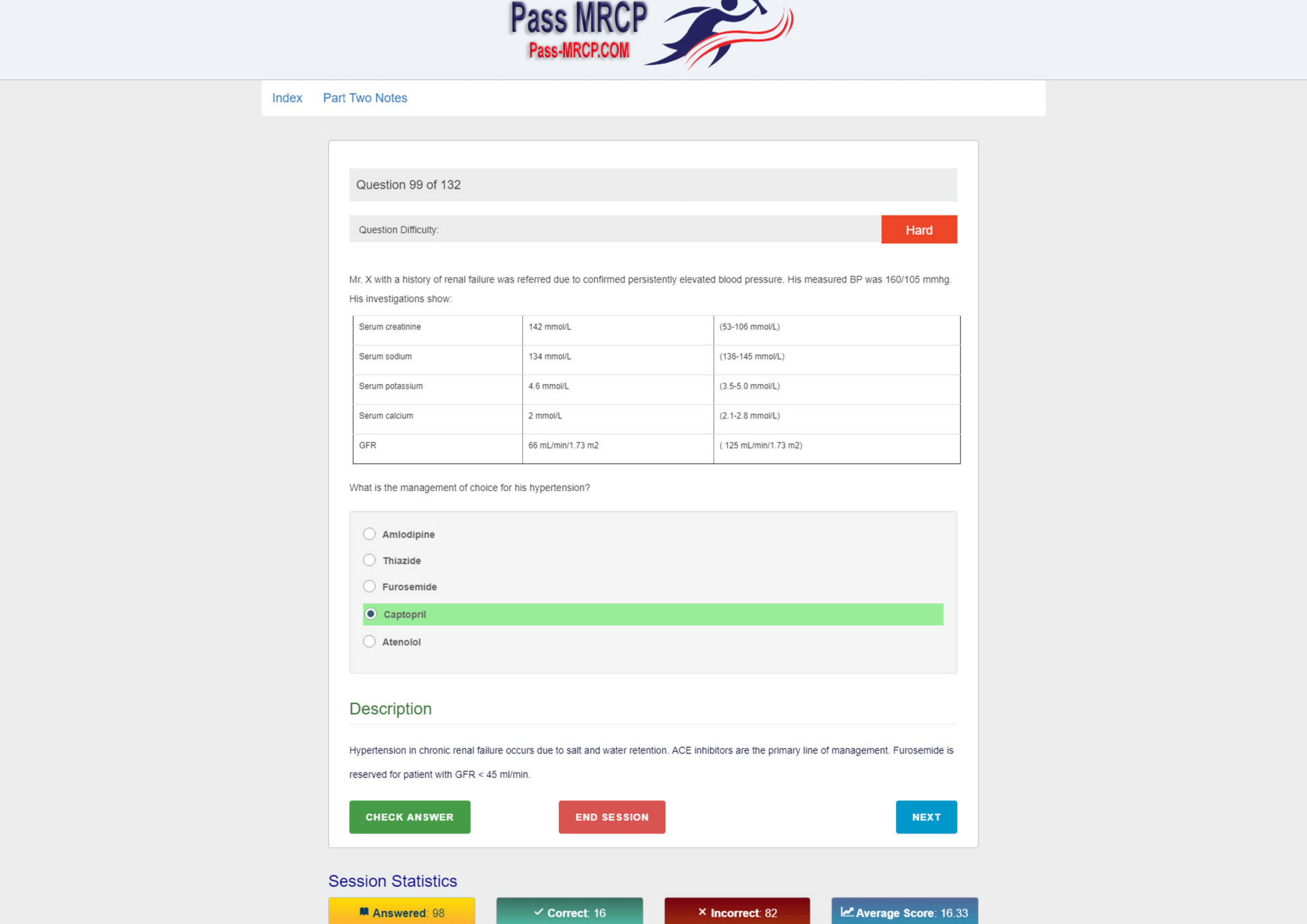
Testicular tumors are the most common solid malignant tumor in men. Types include:

- Seminoma is a pure germ cell tumors, it does not produce tumor markers (HCG in 15% as in this case)
- Non-seminoma as teratoma and embryonal carcinomas, it produces tumor markers as AFP and HCG

CHECK ANSWER END SESSION NEXT

Session Statistics

Answered: 97 ✓ **Correct**: 16 ✕ **Incorrect**: 81 **Average Score**: 16.49 %



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Question Difficulty: **Hard**

Mr. X with a history of renal failure was referred due to confirmed persistently elevated blood pressure. His measured BP was 160/105 mmhg. His investigations show:

Serum creatinine	142 mmol/L	(53-106 mmol/L)
Serum sodium	134 mmol/L	(136-145 mmol/L)
Serum potassium	4.6 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
GFR	66 mL/min/1.73 m2	(125 mL/min/1.73 m2)

What is the management of choice for his hypertension?

- ○ **Amlodipine**
- ○ **Thiazide**
- ○ **Furosemide**
- ● **Captopril**
- ○ **Atenolol**

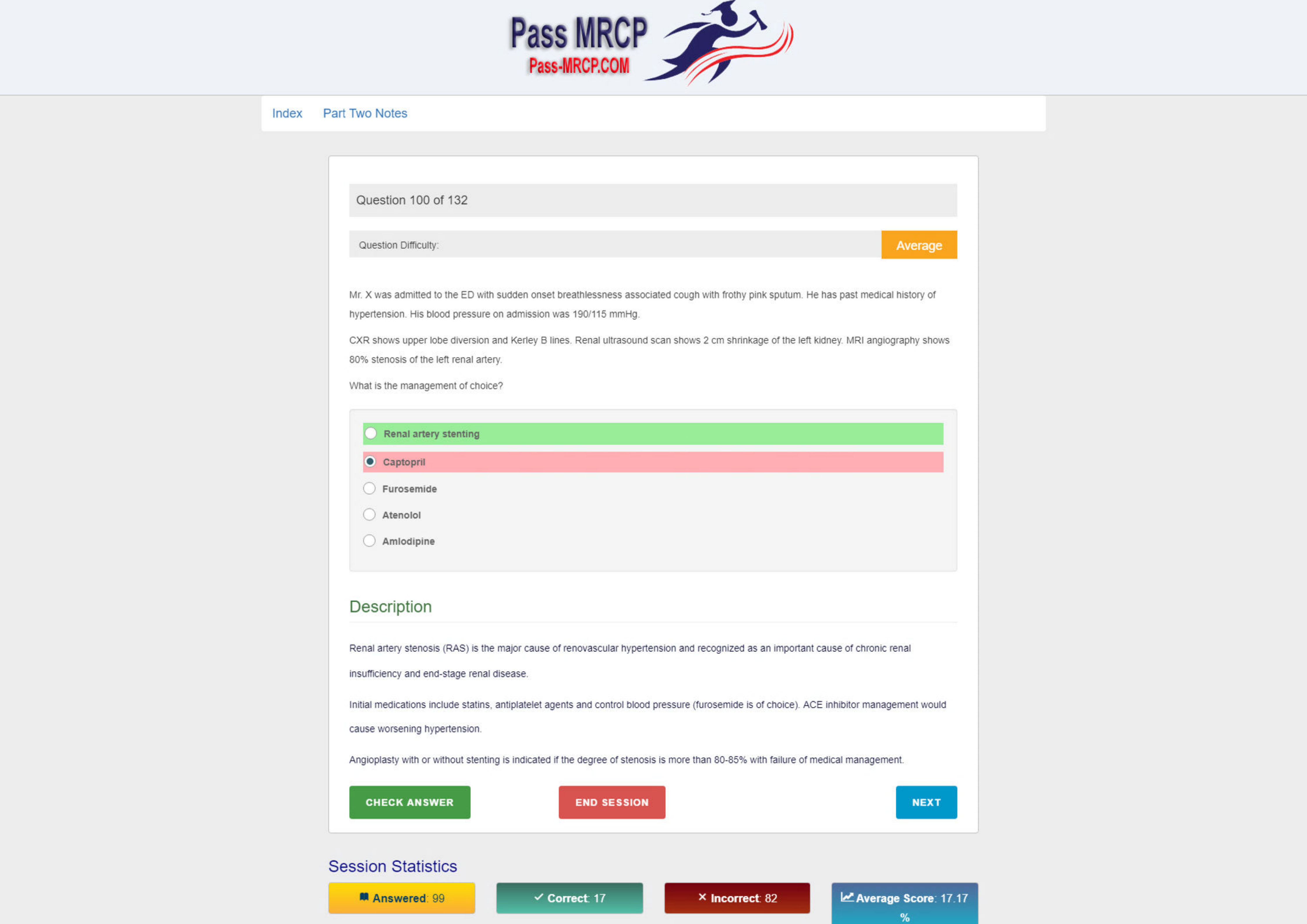
Description

Hypertension in chronic renal failure occurs due to salt and water retention. ACE inhibitors are the primary line of management. Furosemide is reserved for patient with GFR < 45 ml/min.

CHECK ANSWER
END SESSION
NEXT

Session Statistics

Answered: 98
✓ Correct: 16
✕ Incorrect: 82
Average Score: 16.33



Question 100 of 132

Question Difficulty: **Average**

Mr. X was admitted to the ED with sudden onset breathlessness associated cough with frothy pink sputum. He has past medical history of hypertension. His blood pressure on admission was 190/115 mmHg.

CXR shows upper lobe diversion and Kerley B lines. Renal ultrasound scan shows 2 cm shrinkage of the left kidney. MRI angiography shows 80% stenosis of the left renal artery.

What is the management of choice?

- ○ **Renal artery stenting**
- ● **Captopril**
- ○ **Furosemide**
- ○ **Atenolol**
- ○ **Amlodipine**

Description

Renal artery stenosis (RAS) is the major cause of renovascular hypertension and recognized as an important cause of chronic renal insufficiency and end-stage renal disease.

Initial medications include statins, antiplatelet agents and control blood pressure (furosemide is of choice). ACE inhibitor management would cause worsening hypertension.

Angioplasty with or without stenting is indicated if the degree of stenosis is more than 80-85% with failure of medical management.

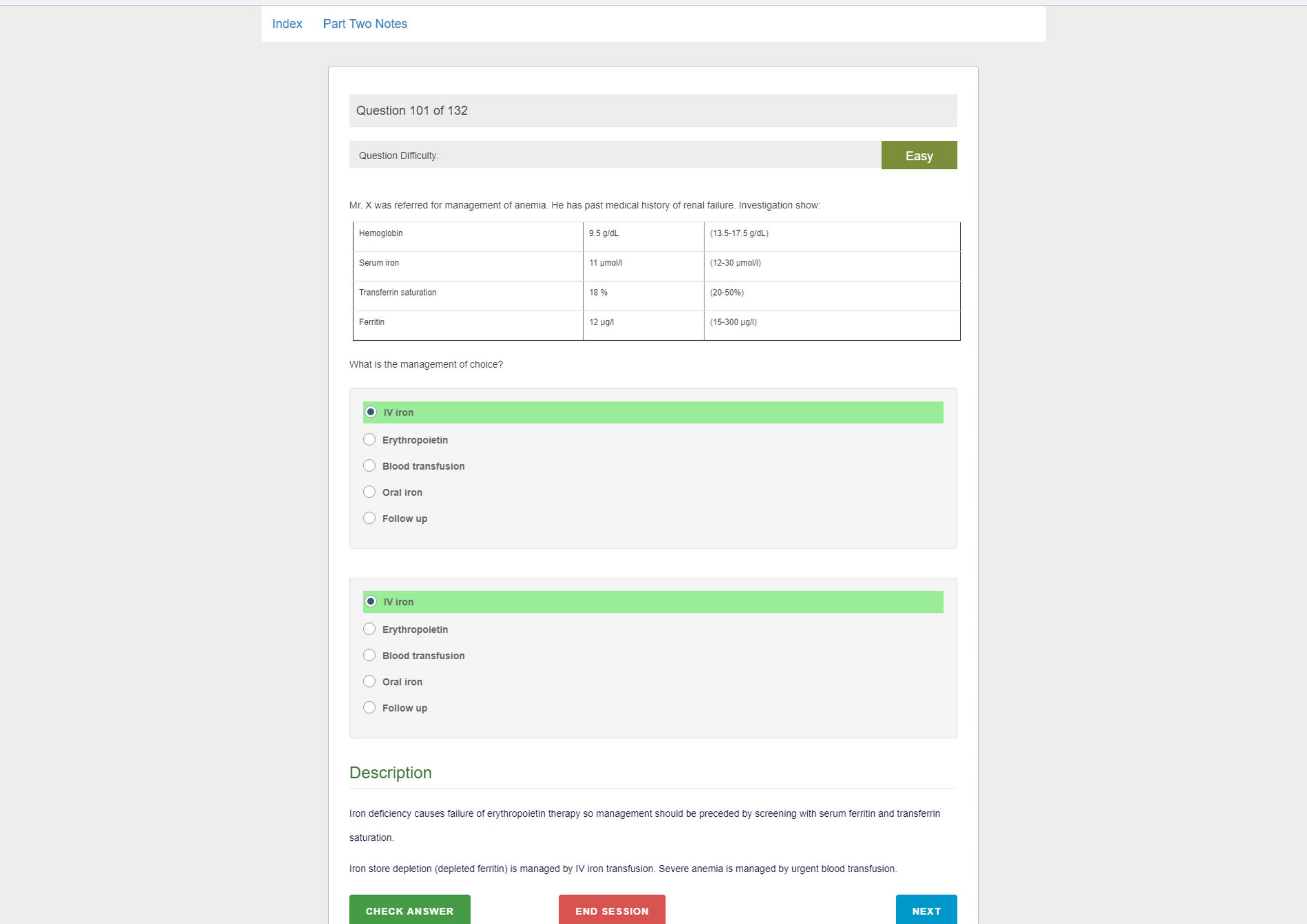
Session Statistics

Answered: 99

✓ **Correct**: 17

× **Incorrect**: 82

Average Score: 17.17 %



Question 101 of 132

Question Difficulty: **Easy**

Mr. X was referred for management of anemia. He has past medical history of renal failure. Investigation show:

Hemoglobin	9.5 g/dL	(13.5-17.5 g/dL)
Serum iron	11 μmol/l	(12-30 μmol/l)
Transferrin saturation	18 %	(20-50%)
Ferritin	12 μg/l	(15-300 μg/l)

What is the management of choice?

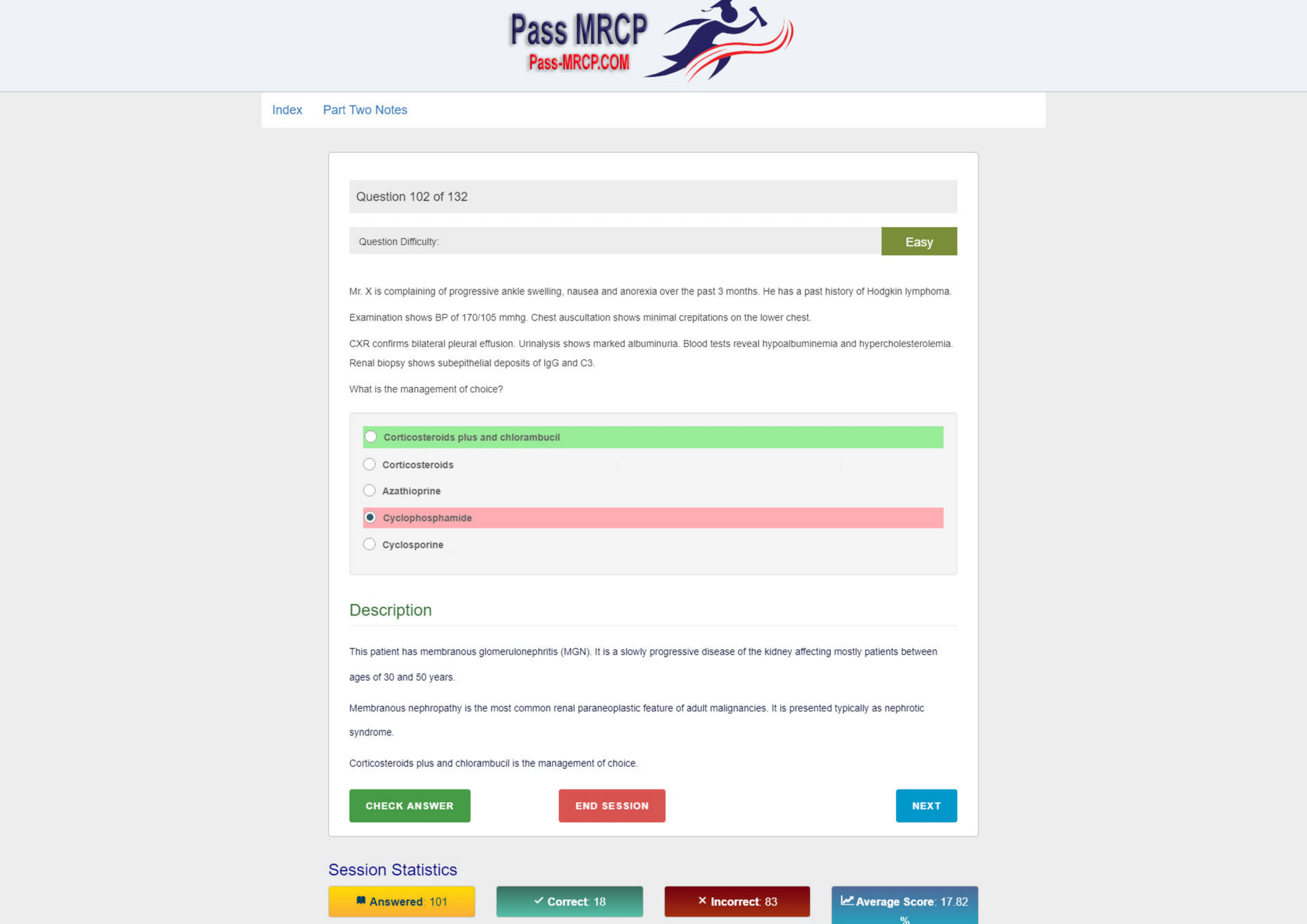
● **IV iron**
○ **Erythropoietin**
○ **Blood transfusion**
○ **Oral iron**
○ **Follow up**

● **IV iron**
○ **Erythropoietin**
○ **Blood transfusion**
○ **Oral iron**
○ **Follow up**

Description

Iron deficiency causes failure of erythropoietin therapy so management should be preceded by screening with serum ferritin and transferrin saturation.

Iron store depletion (depleted ferritin) is managed by IV iron transfusion. Severe anemia is managed by urgent blood transfusion.



Question 102 of 132

Question Difficulty: Easy

Mr. X is complaining of progressive ankle swelling, nausea and anorexia over the past 3 months. He has a past history of Hodgkin lymphoma.

Examination shows BP of 170/105 mmhg. Chest auscultation shows minimal crepitations on the lower chest.

CXR confirms bilateral pleural effusion. Urinalysis shows marked albuminuria. Blood tests reveal hypoalbuminemia and hypercholesterolemia. Renal biopsy shows subepithelial deposits of IgG and C3.

What is the management of choice?

- ○ **Corticosteroids plus and chlorambucil**
- ○ **Corticosteroids**
- ○ **Azathioprine**
- ● **Cyclophosphamide**
- ○ **Cyclosporine**

Description

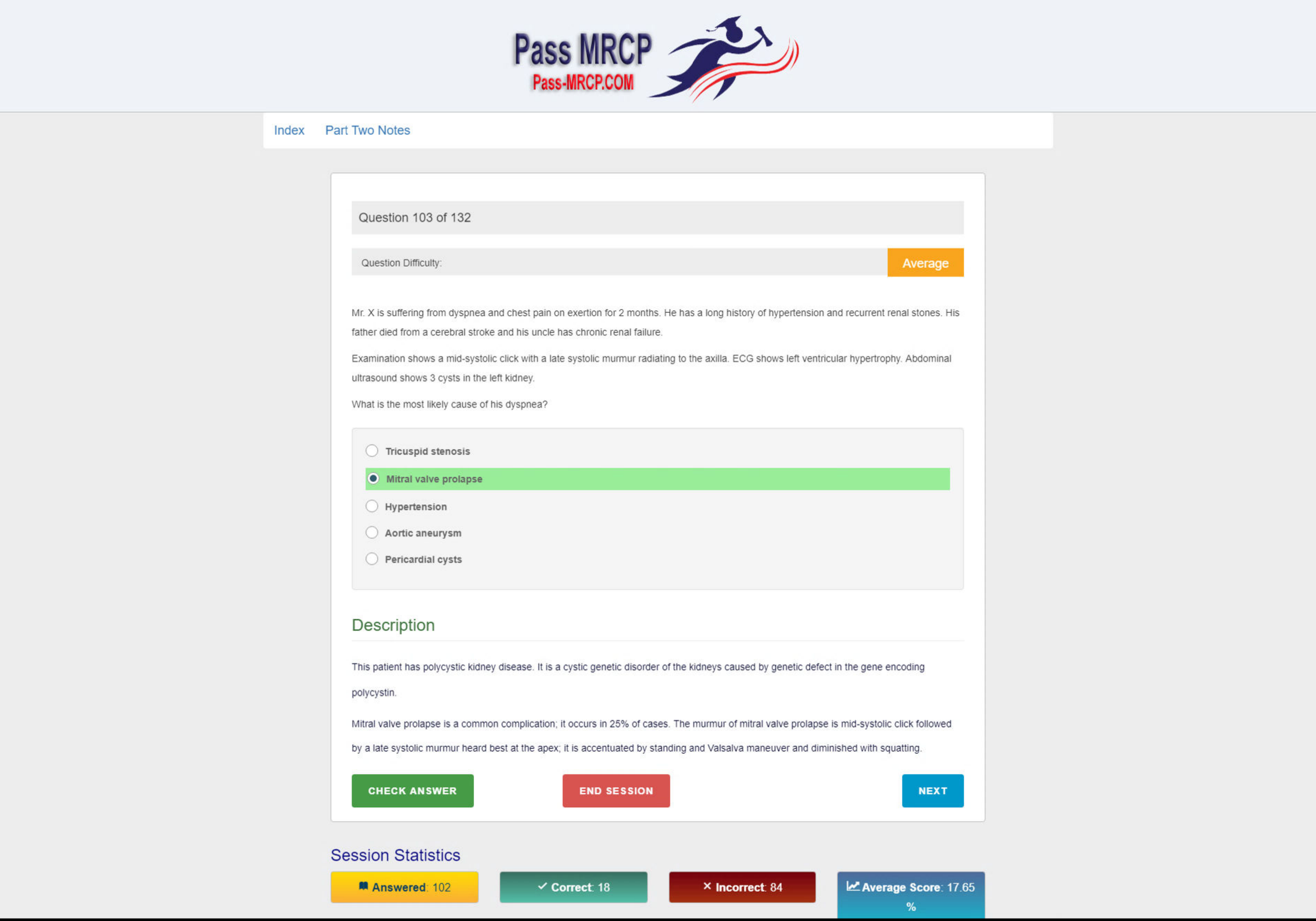
This patient has membranous glomerulonephritis (MGN). It is a slowly progressive disease of the kidney affecting mostly patients between ages of 30 and 50 years.

Membranous nephropathy is the most common renal paraneoplastic feature of adult malignancies. It is presented typically as nephrotic syndrome.

Corticosteroids plus and chlorambucil is the management of choice.

Session Statistics

Answered: 101
✓ Correct: 18
× Incorrect: 83
Average Score: 17.82 %



Question 103 of 132

Question Difficulty: **Average**

Mr. X is suffering from dyspnea and chest pain on exertion for 2 months. He has a long history of hypertension and recurrent renal stones. His father died from a cerebral stroke and his uncle has chronic renal failure.

Examination shows a mid-systolic click with a late systolic murmur radiating to the axilla. ECG shows left ventricular hypertrophy. Abdominal ultrasound shows 3 cysts in the left kidney.

What is the most likely cause of his dyspnea?

- ○ **Tricuspid stenosis**
- ● **Mitral valve prolapse**
- ○ **Hypertension**
- ○ **Aortic aneurysm**
- ○ **Pericardial cysts**

Description

This patient has polycystic kidney disease. It is a cystic genetic disorder of the kidneys caused by genetic defect in the gene encoding polycystin.

Mitral valve prolapse is a common complication; it occurs in 25% of cases. The murmur of mitral valve prolapse is mid-systolic click followed by a late systolic murmur heard best at the apex; it is accentuated by standing and Valsalva maneuver and diminished with squatting.

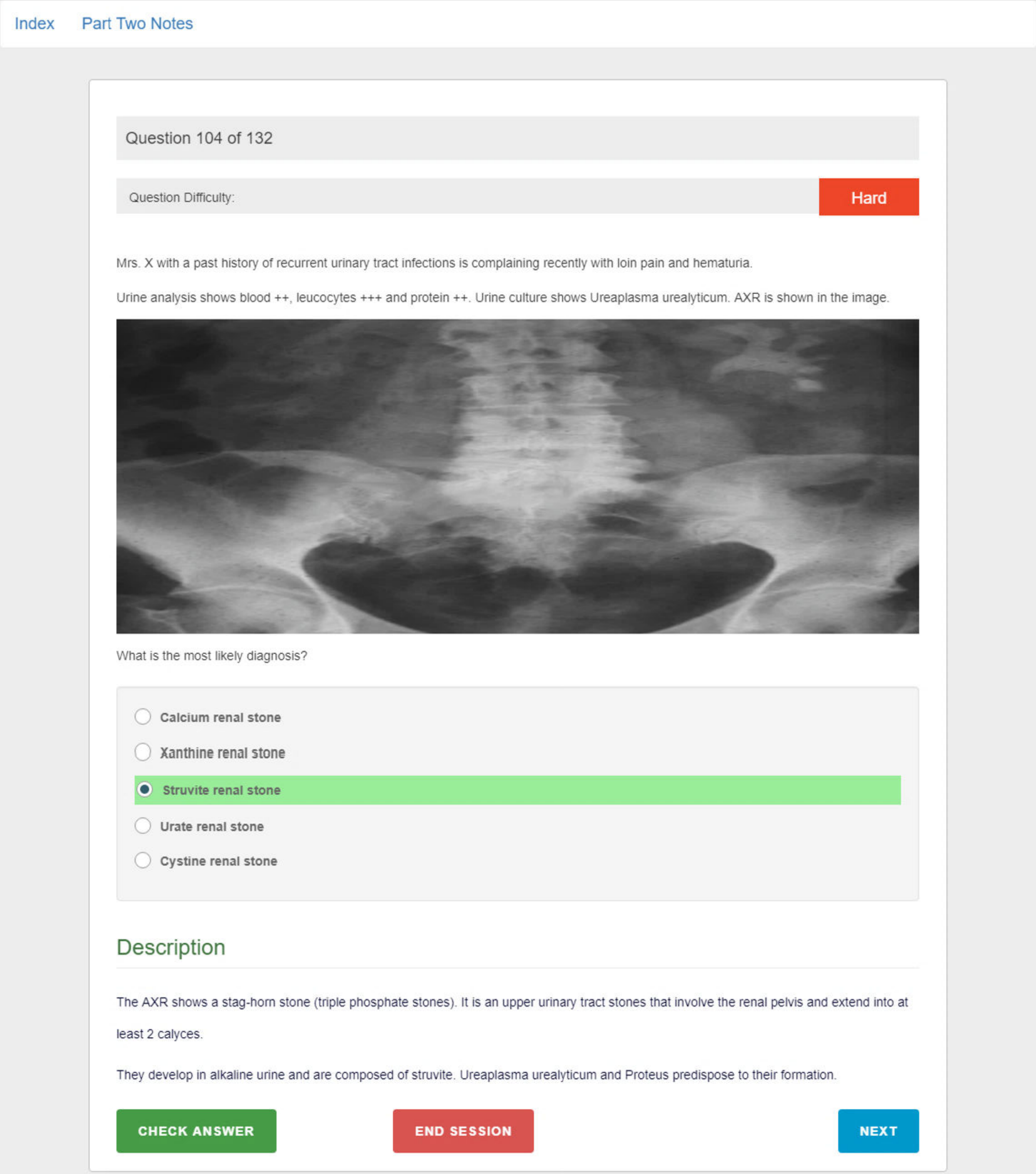
Session Statistics

Answered: 102

✓ **Correct**: 18

× **Incorrect**: 84

Average Score: 17.65 %



Question 104 of 132

Question Difficulty: **Hard**

Mrs. X with a past history of recurrent urinary tract infections is complaining recently with loin pain and hematuria.

Urine analysis shows blood ++, leucocytes +++ and protein ++. Urine culture shows Ureaplasma urealyticum. AXR is shown in the image.

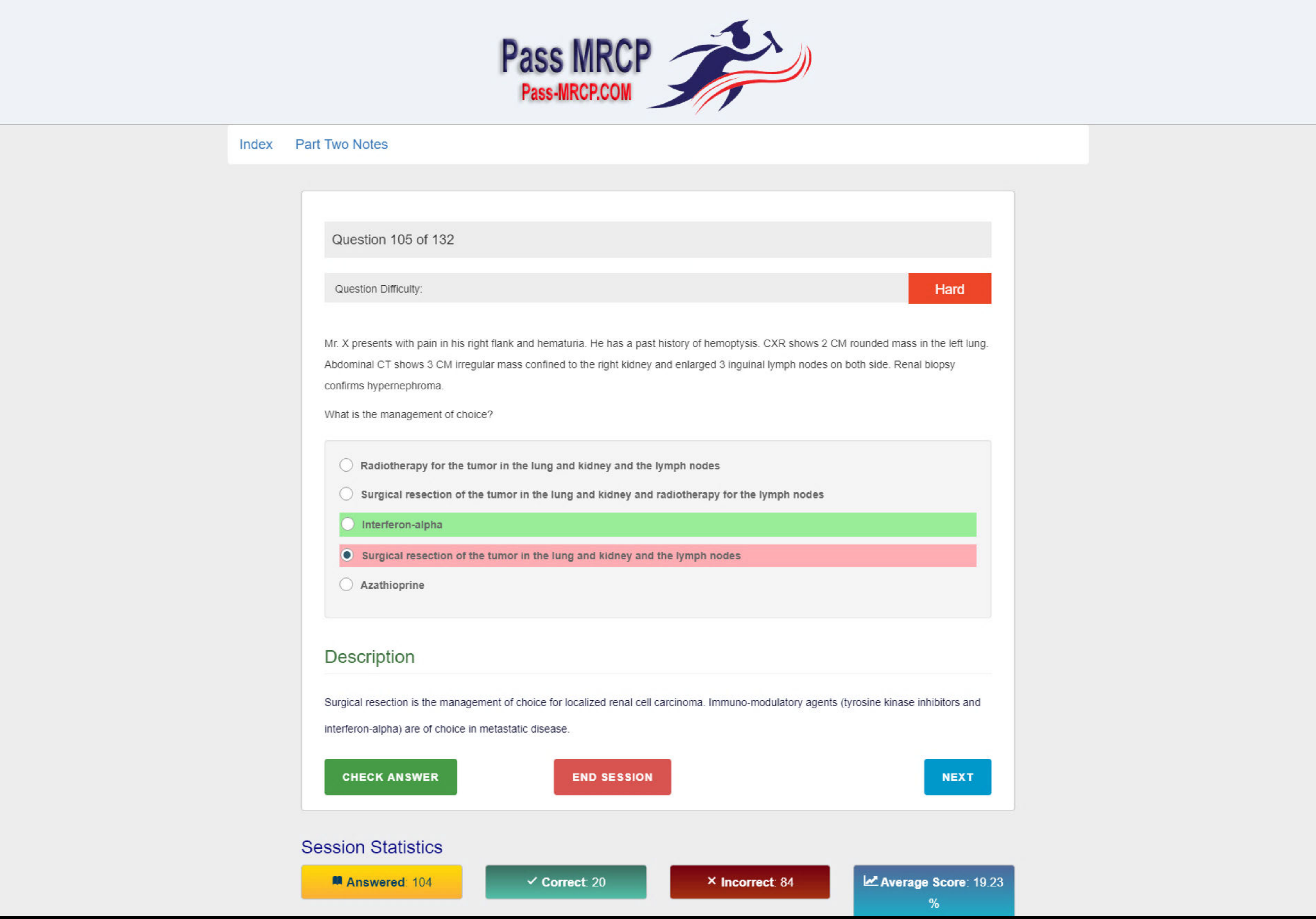
What is the most likely diagnosis?

- ○ **Calcium renal stone**
- ○ **Xanthine renal stone**
- ● **Struvite renal stone**
- ○ **Urate renal stone**
- ○ **Cystine renal stone**

Description

The AXR shows a stag-horn stone (triple phosphate stones). It is an upper urinary tract stones that involve the renal pelvis and extend into at least 2 calyces.

They develop in alkaline urine and are composed of struvite. Ureaplasma urealyticum and Proteus predispose to their formation.



Question 105 of 132

Question Difficulty: Hard

Mr. X presents with pain in his right flank and hematuria. He has a past history of hemoptysis. CXR shows 2 CM rounded mass in the left lung. Abdominal CT shows 3 CM irregular mass confined to the right kidney and enlarged 3 inguinal lymph nodes on both side. Renal biopsy confirms hypernephroma.

What is the management of choice?

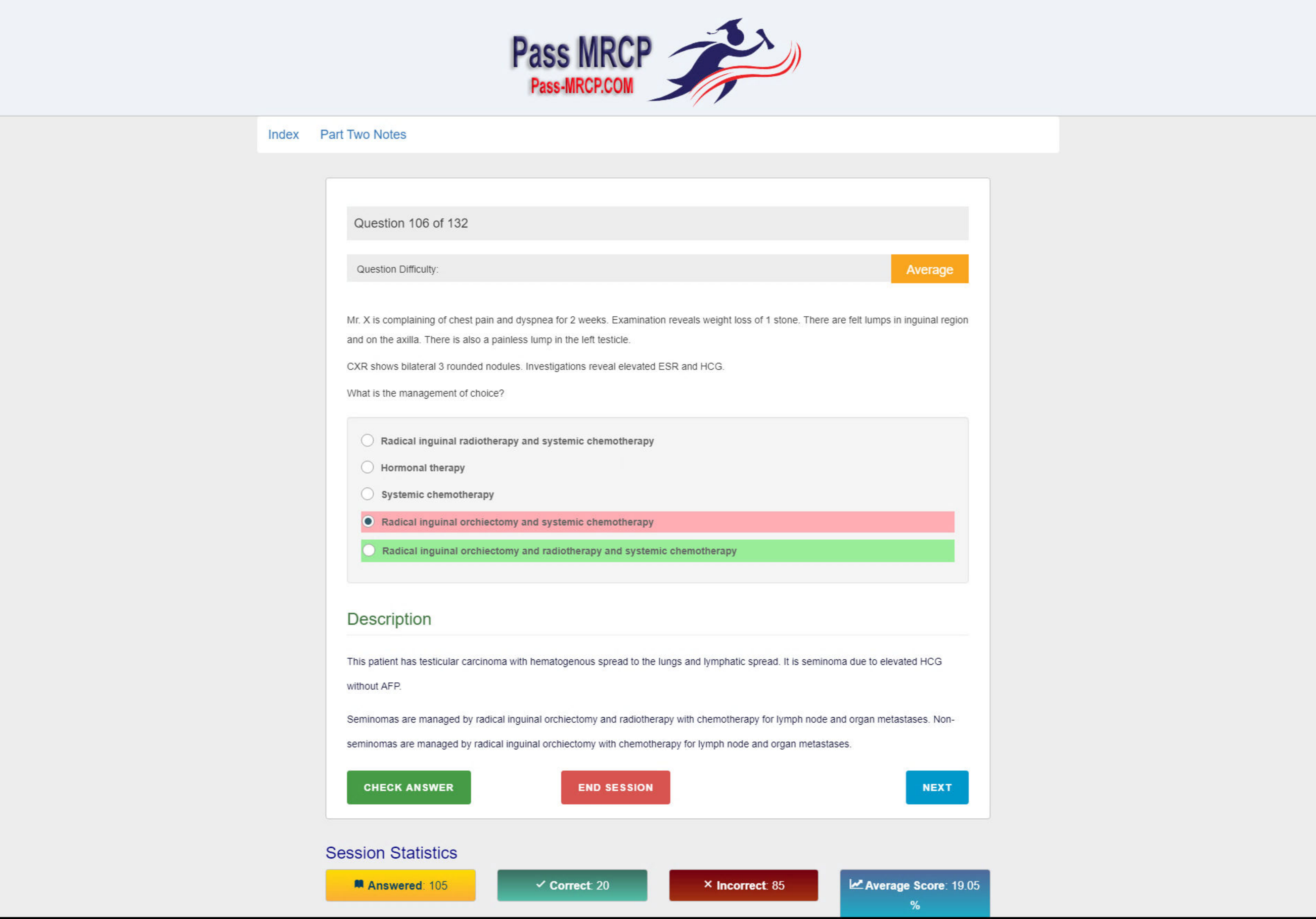
- ○ **Radiotherapy for the tumor in the lung and kidney and the lymph nodes**
- ○ **Surgical resection of the tumor in the lung and kidney and radiotherapy for the lymph nodes**
- ○ **Interferon-alpha**
- ● **Surgical resection of the tumor in the lung and kidney and the lymph nodes**
- ○ **Azathioprine**

Description

Surgical resection is the management of choice for localized renal cell carcinoma. Immuno-modulatory agents (tyrosine kinase inhibitors and interferon-alpha) are of choice in metastatic disease.

Session Statistics

- Answered: 104
- ✓ Correct: 20
- ✕ Incorrect: 84
- Average Score: 19.23 %



Question 106 of 132

Question Difficulty: Average

Mr. X is complaining of chest pain and dyspnea for 2 weeks. Examination reveals weight loss of 1 stone. There are felt lumps in inguinal region and on the axilla. There is also a painless lump in the left testicle.

CXR shows bilateral 3 rounded nodules. Investigations reveal elevated ESR and HCG.

What is the management of choice?

○ **Radical inguinal radiotherapy and systemic chemotherapy**
○ **Hormonal therapy**
○ **Systemic chemotherapy**
● **Radical inguinal orchiectomy and systemic chemotherapy**
○ **Radical inguinal orchiectomy and radiotherapy and systemic chemotherapy**

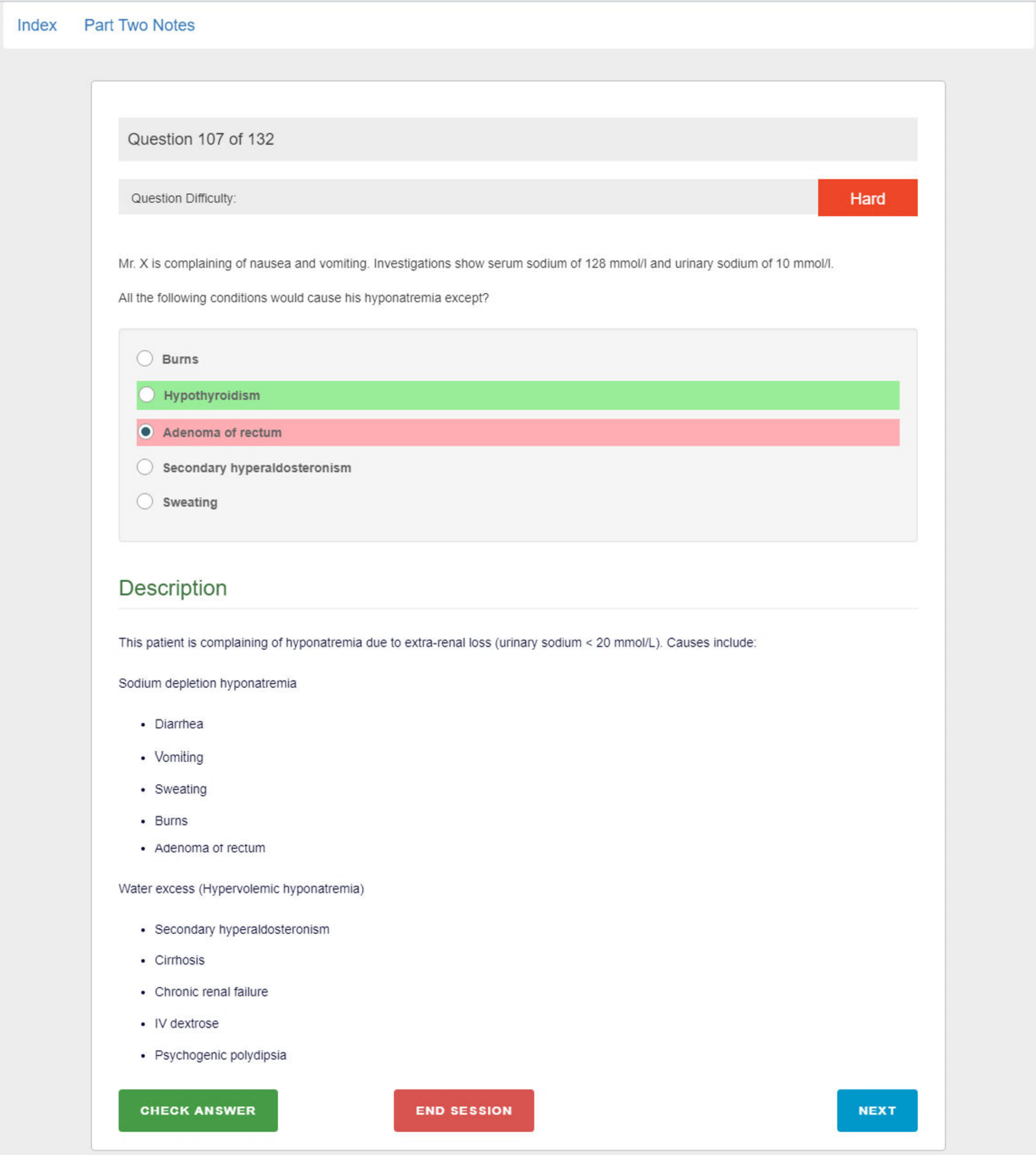
Description

This patient has testicular carcinoma with hematogenous spread to the lungs and lymphatic spread. It is seminoma due to elevated HCG without AFP.

Seminomas are managed by radical inguinal orchiectomy and radiotherapy with chemotherapy for lymph node and organ metastases. Non-seminomas are managed by radical inguinal orchiectomy with chemotherapy for lymph node and organ metastases.

Session Statistics

Answered: 105
✓ Correct: 20
✕ Incorrect: 85
Average Score: 19.05 %



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Question Difficulty: Hard

Mr. X is complaining of nausea and vomiting. Investigations show serum sodium of 128 mmol/l and urinary sodium of 10 mmol/l.

All the following conditions would cause his hyponatremia except?

○ **Burns**
○ **Hypothyroidism**
● **Adenoma of rectum**
○ **Secondary hyperaldosteronism**
○ **Sweating**

Description

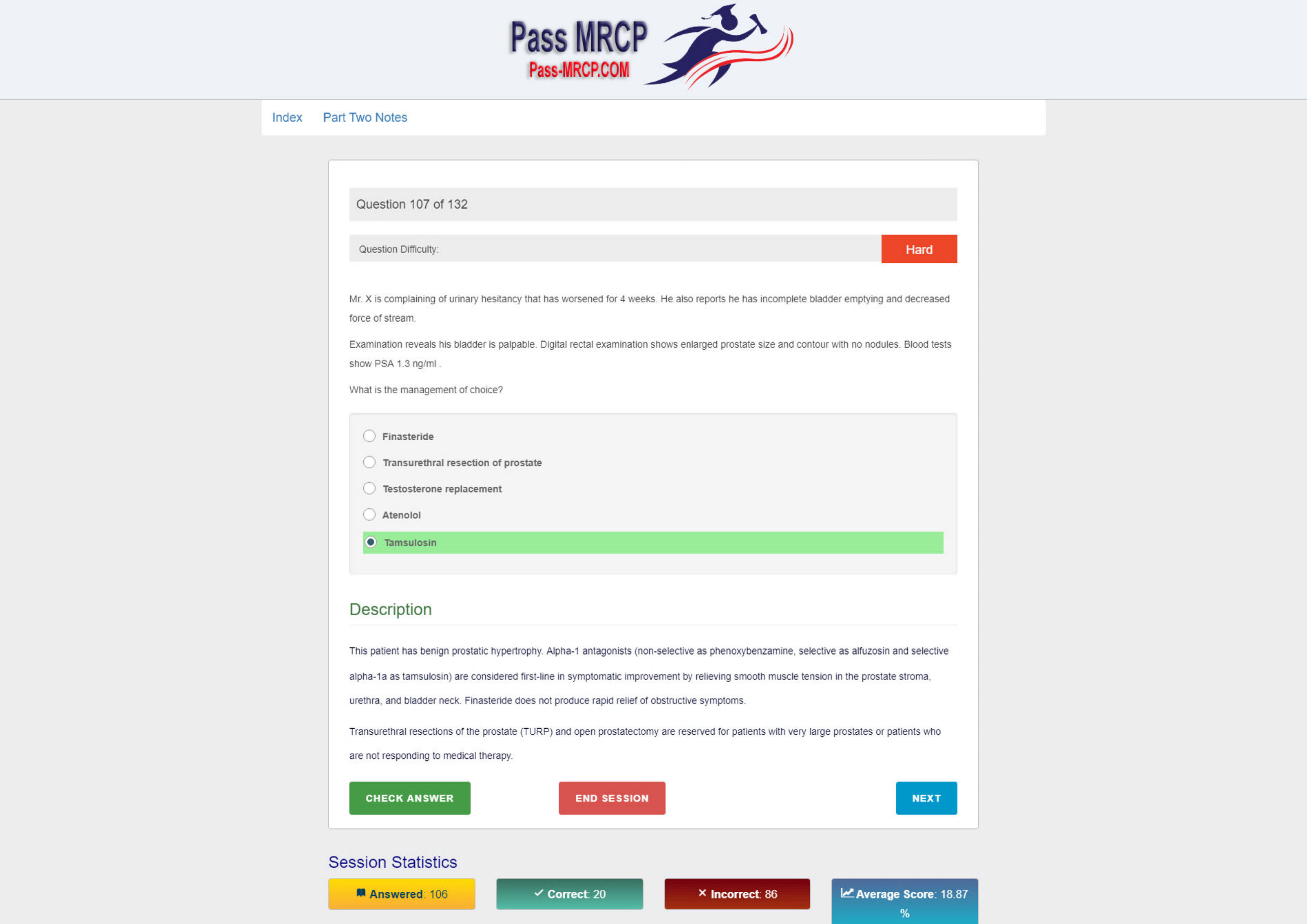
This patient is complaining of hyponatremia due to extra-renal loss (urinary sodium < 20 mmol/L). Causes include:

Sodium depletion hyponatremia

- Diarrhea
- Vomiting
- Sweating
- Burns
- Adenoma of rectum

Water excess (Hypervolemic hyponatremia)

- Secondary hyperaldosteronism
- Cirrhosis
- Chronic renal failure
- IV dextrose
- Psychogenic polydipsia



Question 107 of 132

Question Difficulty: **Hard**

Mr. X is complaining of urinary hesitancy that has worsened for 4 weeks. He also reports he has incomplete bladder emptying and decreased force of stream.

Examination reveals his bladder is palpable. Digital rectal examination shows enlarged prostate size and contour with no nodules. Blood tests show PSA 1.3 ng/ml .

What is the management of choice?

- ○ **Finasteride**
- ○ **Transurethral resection of prostate**
- ○ **Testosterone replacement**
- ○ **Atenolol**
- ● **Tamsulosin**

Description

This patient has benign prostatic hypertrophy. Alpha-1 antagonists (non-selective as phenoxybenzamine, selective as alfuzosin and selective alpha-1a as tamsulosin) are considered first-line in symptomatic improvement by relieving smooth muscle tension in the prostate stroma, urethra, and bladder neck. Finasteride does not produce rapid relief of obstructive symptoms.

Transurethral resections of the prostate (TURP) and open prostatectomy are reserved for patients with very large prostates or patients who are not responding to medical therapy.

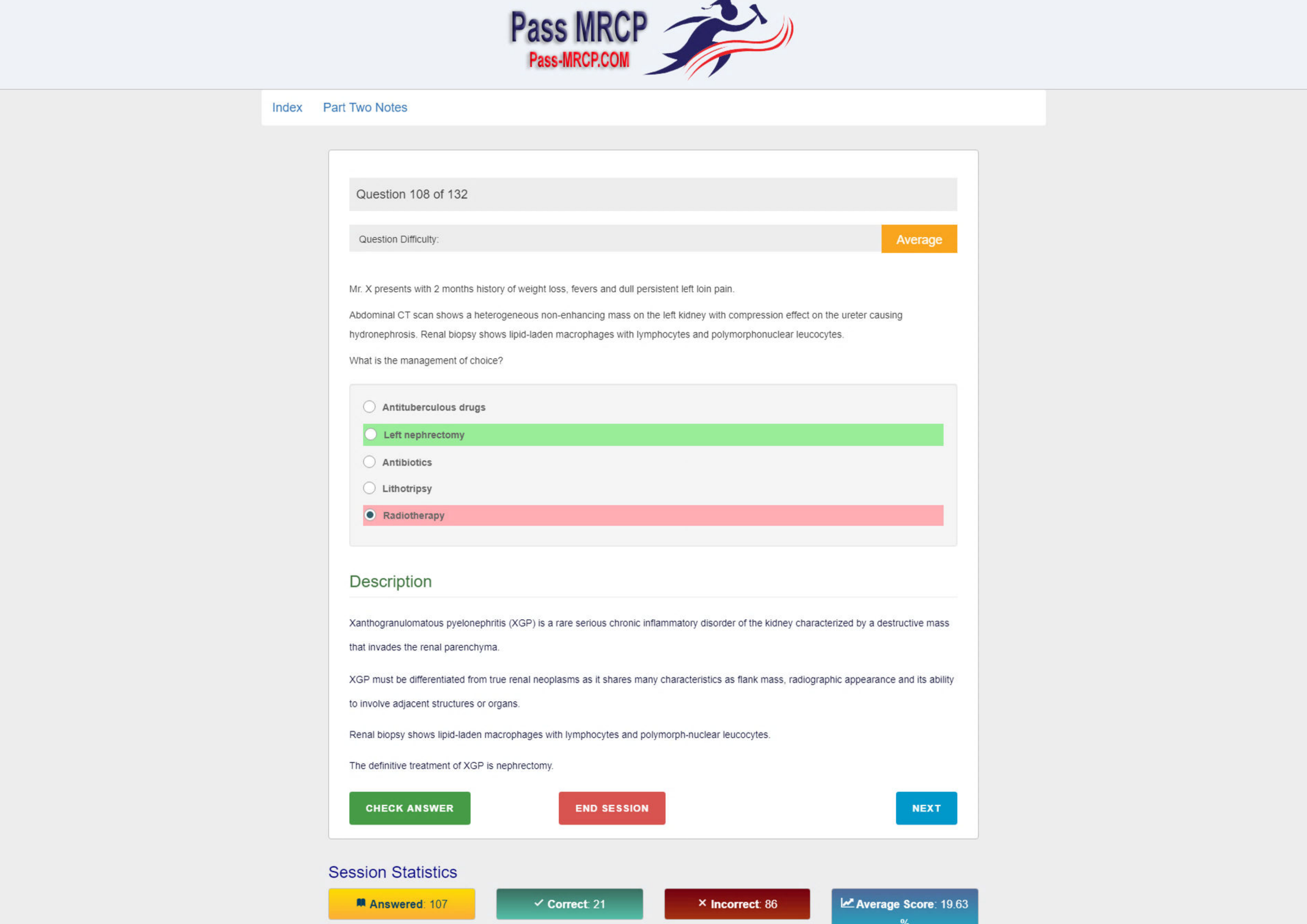
Session Statistics

Answered: 106

✓ **Correct**: 20

× **Incorrect**: 86

Average Score: 18.87 %



Question 108 of 132

Question Difficulty: Average

Mr. X presents with 2 months history of weight loss, fevers and dull persistent left loin pain.

Abdominal CT scan shows a heterogeneous non-enhancing mass on the left kidney with compression effect on the ureter causing hydronephrosis. Renal biopsy shows lipid-laden macrophages with lymphocytes and polymorphonuclear leucocytes.

What is the management of choice?

○ **Antituberculous drugs**

○ **Left nephrectomy**

○ **Antibiotics**

○ **Lithotripsy**

● **Radiotherapy**

Description

Xanthogranulomatous pyelonephritis (XGP) is a rare serious chronic inflammatory disorder of the kidney characterized by a destructive mass that invades the renal parenchyma.

XGP must be differentiated from true renal neoplasms as it shares many characteristics as flank mass, radiographic appearance and its ability to involve adjacent structures or organs.

Renal biopsy shows lipid-laden macrophages with lymphocytes and polymorph-nuclear leucocytes.

The definitive treatment of XGP is nephrectomy.

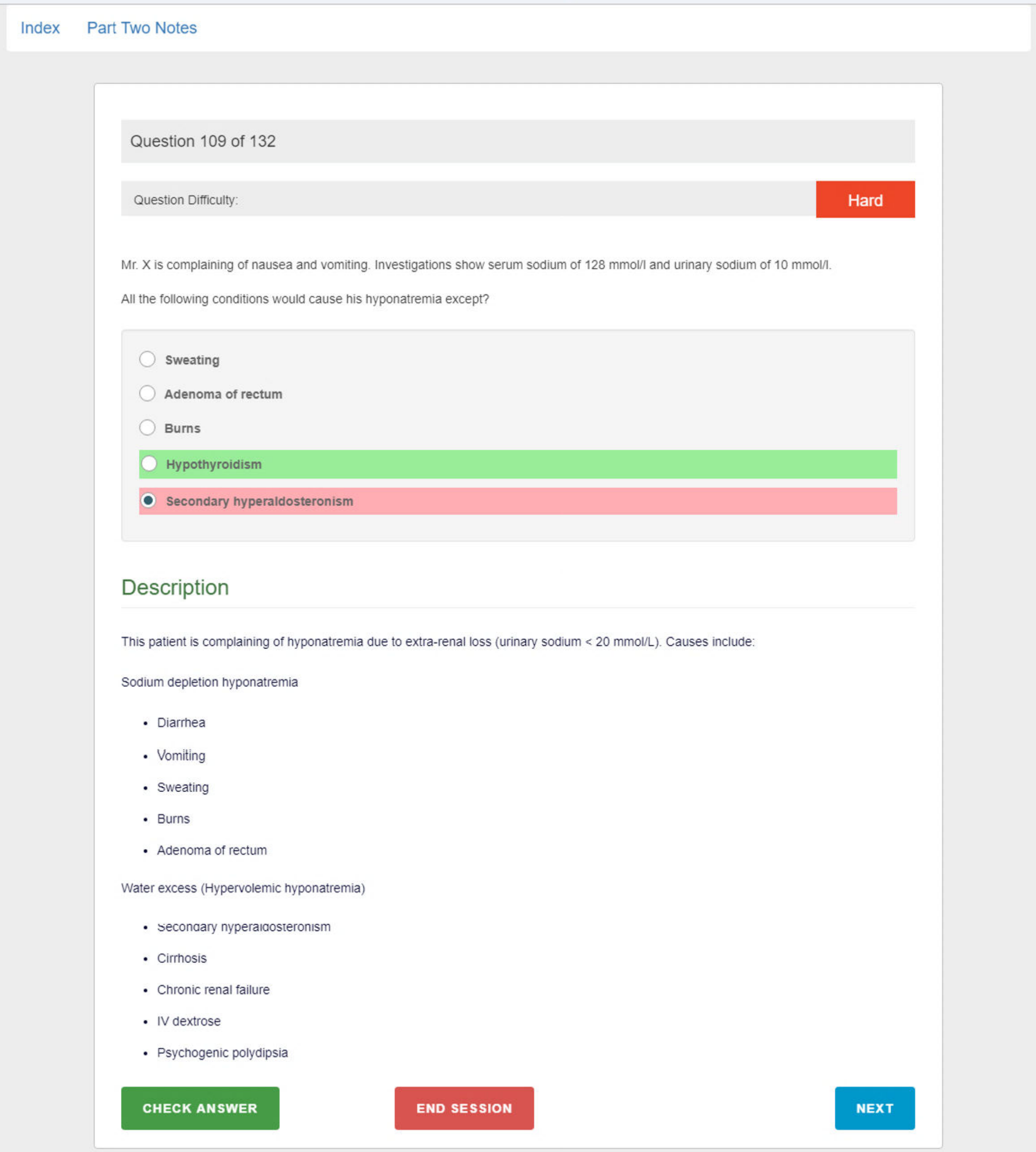
Session Statistics

Answered: 107

✓ **Correct**: 21

✕ **Incorrect**: 86

Average Score: 19.63



Question 109 of 132

Question Difficulty: Hard

Mr. X is complaining of nausea and vomiting. Investigations show serum sodium of 128 mmol/l and urinary sodium of 10 mmol/l.

All the following conditions would cause his hyponatremia except?

○ **Sweating**
○ **Adenoma of rectum**
○ **Burns**
○ **Hypothyroidism**
● **Secondary hyperaldosteronism**

Description

This patient is complaining of hyponatremia due to extra-renal loss (urinary sodium < 20 mmol/L). Causes include:

Sodium depletion hyponatremia

- Diarrhea
- Vomiting
- Sweating
- Burns
- Adenoma of rectum

Water excess (Hypervolemic hyponatremia)

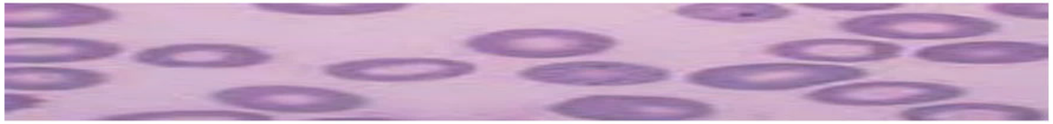
- Secondary hyperaldosteronism
- Cirrhosis
- Chronic renal failure
- IV dextrose
- Psychogenic polydipsia

Question 110 of 132

Question Difficulty: **Hard**

Mr. X is complaining of intermittent abdominal discomfort and polyuria. He works at rubber industry and had a recent respiratory tract infection.

Examination shows mild pallor and blue lines on his gum margin. Urine analysis shows hematuria and + proteinuria. His blood film is shown in the image.



What is the most likely diagnosis?

- ○ **Minimal change disease**
- ○ **Chronic reflux nephropathy**
- ○ **Analgesic nephropathy**
- ○ **Goodpasture syndrome**
- ● **Lead poisoning**

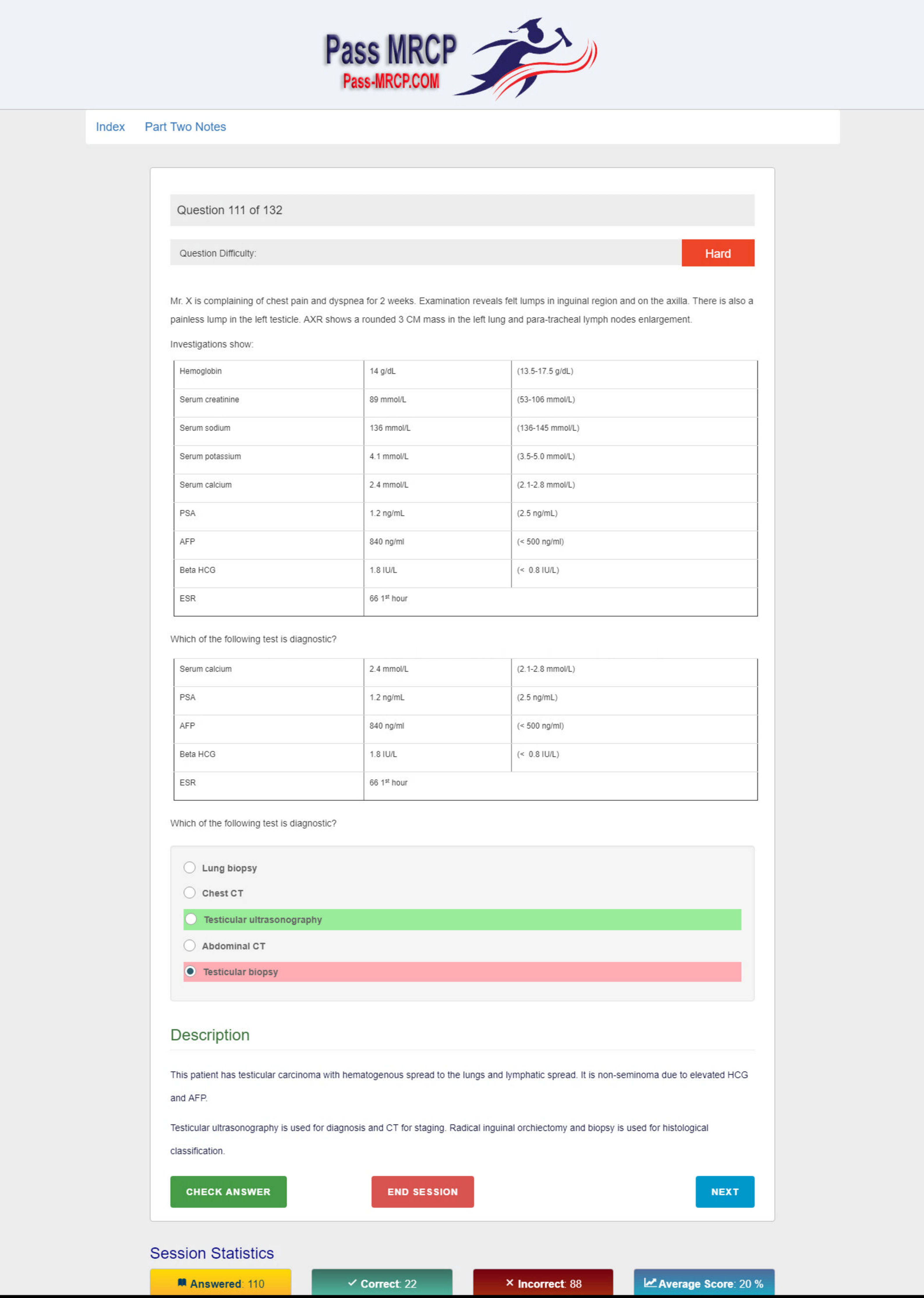
Description

- ○ **Minimal change disease**
- ○ **Chronic reflux nephropathy**
- ○ **Analgesic nephropathy**
- ○ **Goodpasture syndrome**
- ● **Lead poisoning**

Description

Lead poisoning is manifested by:

- CNS: insomnia, delirium, cognitive deficits, tremor, hallucinations, convulsions and peripheral demyelinating motor neuropathies
- GIT: intermittent abdominal pain, nausea, diarrhea or constipation
- Other complications: blue lines on gum margin, renal failure (Fanconi syndrome, chronic tubulo-interstitial nephritis) and male infertility
- CBC shows microcytic anemia with RBC basophilic stippling



Question 111 of 132

Question Difficulty: **Hard**

Mr. X is complaining of chest pain and dyspnea for 2 weeks. Examination reveals felt lumps in inguinal region and on the axilla. There is also a painless lump in the left testicle. AXR shows a rounded 3 CM mass in the left lung and para-tracheal lymph nodes enlargement.

Investigations show:

Hemoglobin	14 g/dL	(13.5-17.5 g/dL)
Serum creatinine	89 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.4 mmol/L	(2.1-2.8 mmol/L)
PSA	1.2 ng/mL	(2.5 ng/mL)
AFP	840 ng/ml	(< 500 ng/ml)
Beta HCG	1.8 IU/L	(< 0.8 IU/L)
ESR	66 1st hour	

Which of the following test is diagnostic?

Serum calcium	2.4 mmol/L	(2.1-2.8 mmol/L)
PSA	1.2 ng/mL	(2.5 ng/mL)
AFP	840 ng/ml	(< 500 ng/ml)
Beta HCG	1.8 IU/L	(< 0.8 IU/L)
ESR	66 1st hour	

Which of the following test is diagnostic?

○ **Lung biopsy**
○ **Chest CT**
○ **Testicular ultrasonography**
○ **Abdominal CT**
● **Testicular biopsy**

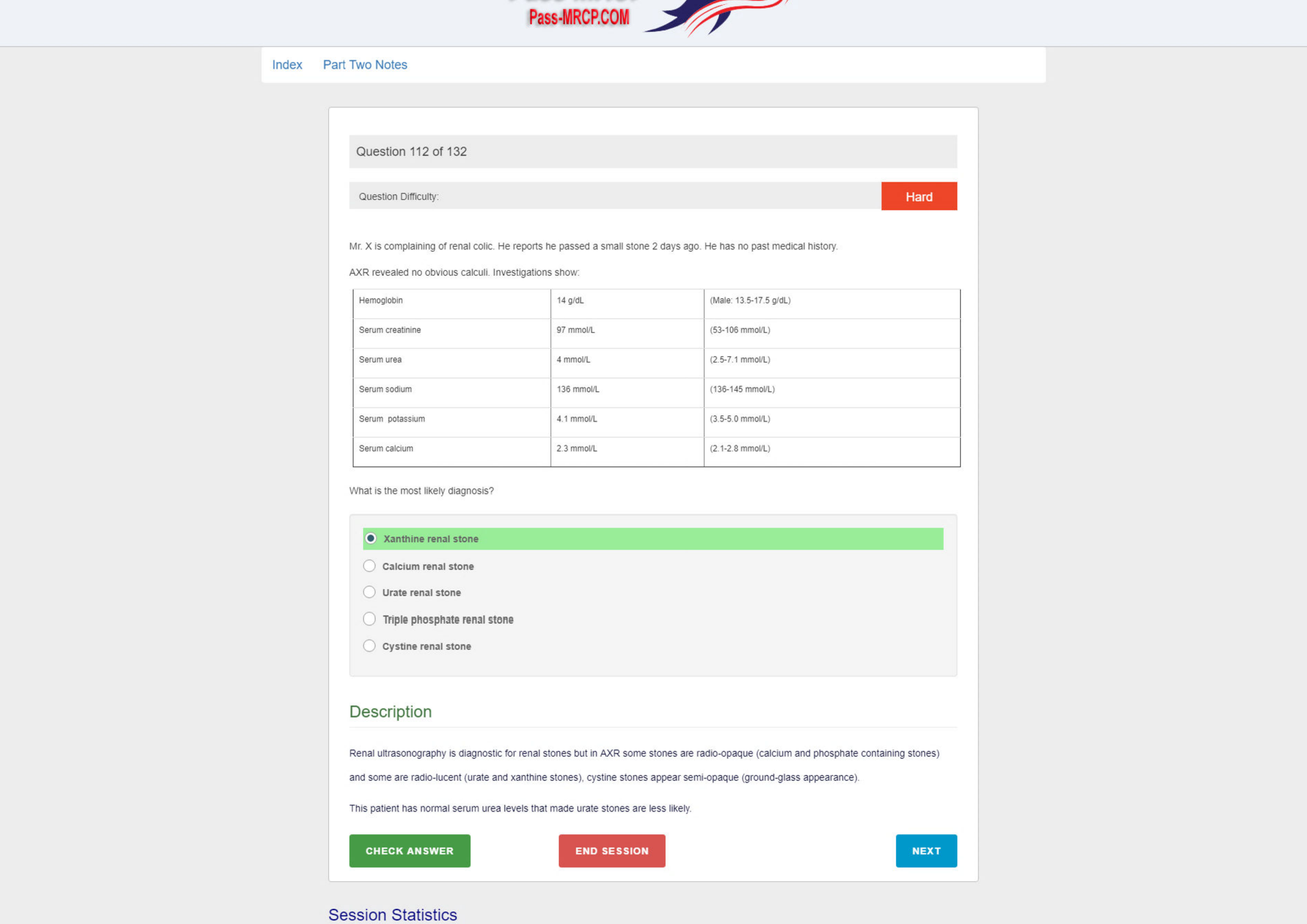
Description

This patient has testicular carcinoma with hematogenous spread to the lungs and lymphatic spread. It is non-seminoma due to elevated HCG and AFP.

Testicular ultrasonography is used for diagnosis and CT for staging. Radical inguinal orchiectomy and biopsy is used for histological classification.

Session Statistics

Answered: 110 ✓ **Correct**: 22 × **Incorrect**: 88 **Average Score**: 20 %



Question 112 of 132

Question Difficulty: **Hard**

Mr. X is complaining of renal colic. He reports he passed a small stone 2 days ago. He has no past medical history.

AXR revealed no obvious calculi. Investigations show:

Hemoglobin	14 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	97 mmol/L	(53-106 mmol/L)
Serum urea	4 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.3 mmol/L	(2.1-2.8 mmol/L)

What is the most likely diagnosis?

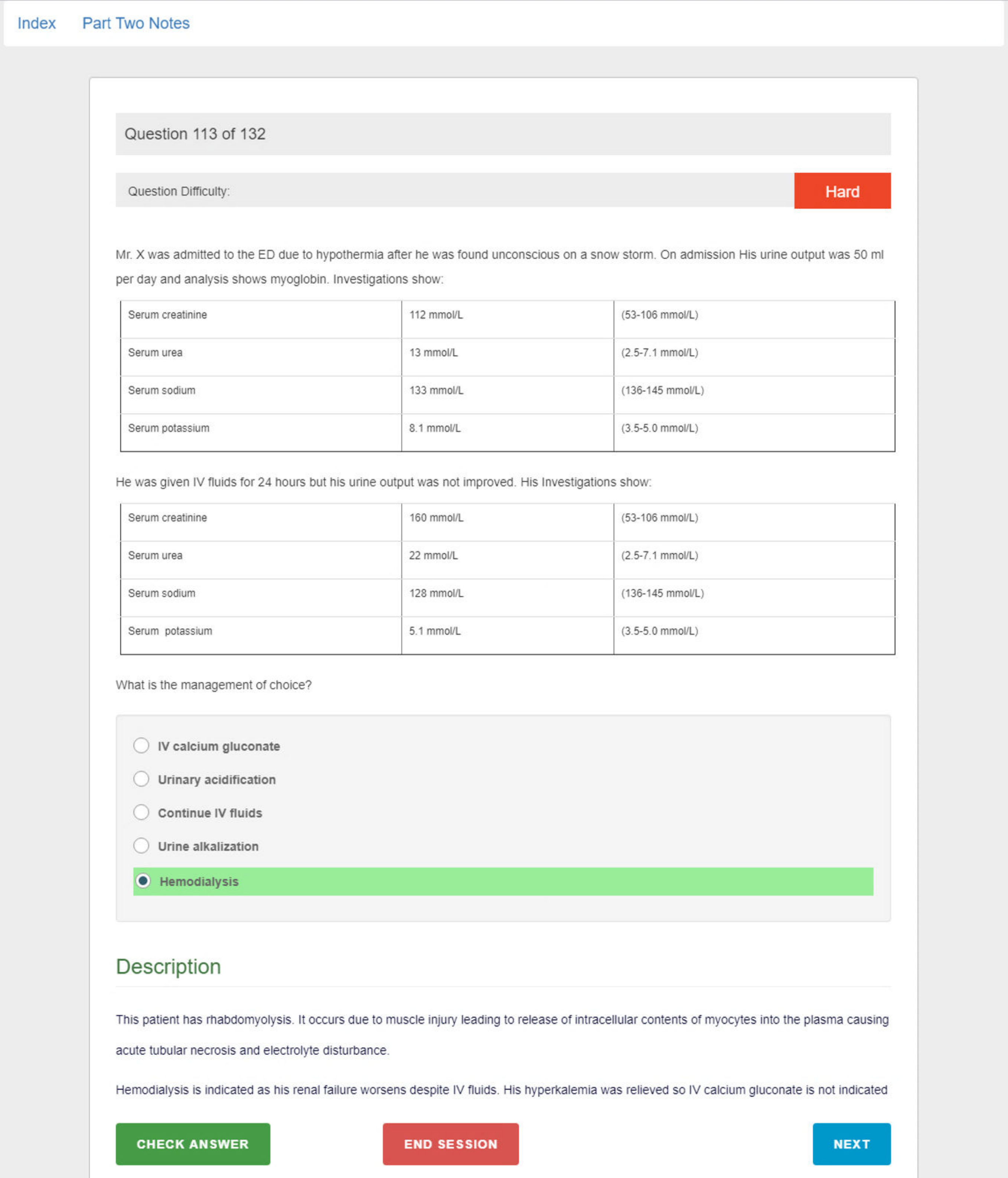
- ● **Xanthine renal stone**
- ○ **Calcium renal stone**
- ○ **Urate renal stone**
- ○ **Triple phosphate renal stone**
- ○ **Cystine renal stone**

Description

Renal ultrasonography is diagnostic for renal stones but in AXR some stones are radio-opaque (calcium and phosphate containing stones) and some are radio-lucent (urate and xanthine stones), cystine stones appear semi-opaque (ground-glass appearance).

This patient has normal serum urea levels that made urate stones are less likely.

Session Statistics



Question 113 of 132

Question Difficulty: **Hard**

Mr. X was admitted to the ED due to hypothermia after he was found unconscious on a snow storm. On admission His urine output was 50 ml per day and analysis shows myoglobin. Investigations show:

Serum creatinine	112 mmol/L	(53-106 mmol/L)
Serum urea	13 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	133 mmol/L	(136-145 mmol/L)
Serum potassium	8.1 mmol/L	(3.5-5.0 mmol/L)

He was given IV fluids for 24 hours but his urine output was not improved. His Investigations show:

Serum creatinine	160 mmol/L	(53-106 mmol/L)
Serum urea	22 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	128 mmol/L	(136-145 mmol/L)
Serum potassium	5.1 mmol/L	(3.5-5.0 mmol/L)

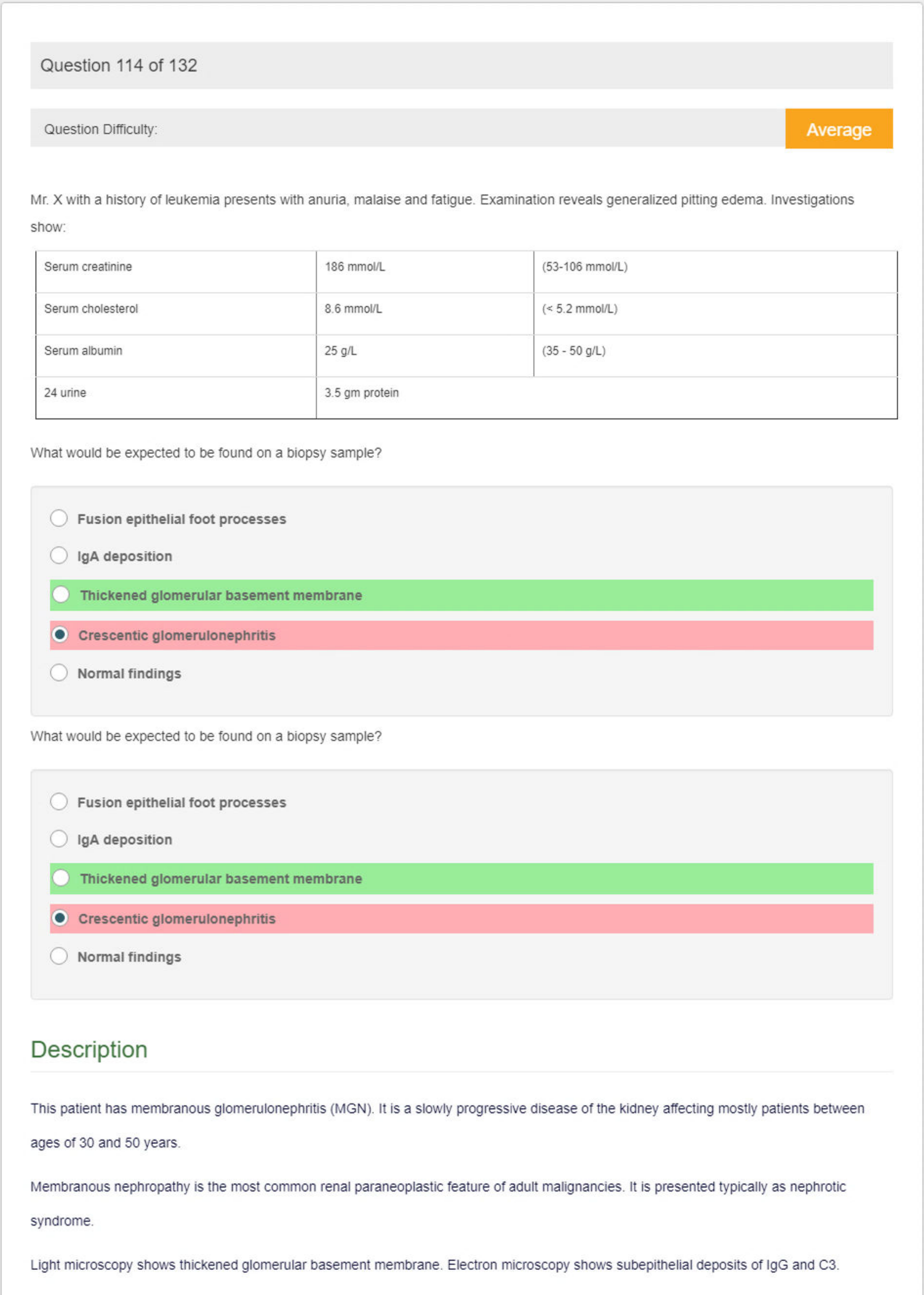
What is the management of choice?

○ **IV calcium gluconate**
○ **Urinary acidification**
○ **Continue IV fluids**
○ **Urine alkalization**
● **Hemodialysis**

Description

This patient has rhabdomyolysis. It occurs due to muscle injury leading to release of intracellular contents of myocytes into the plasma causing acute tubular necrosis and electrolyte disturbance.

Hemodialysis is indicated as his renal failure worsens despite IV fluids. His hyperkalemia was relieved so IV calcium gluconate is not indicated



Question 114 of 132

Question Difficulty: **Average**

Mr. X with a history of leukemia presents with anuria, malaise and fatigue. Examination reveals generalized pitting edema. Investigations show:

Serum creatinine	186 mmol/L	(53-106 mmol/L)
Serum cholesterol	8.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	25 g/L	(35 - 50 g/L)
24 urine	3.5 gm protein	

What would be expected to be found on a biopsy sample?

- ○ **Fusion epithelial foot processes**
- ○ **IgA deposition**
- ○ **Thickened glomerular basement membrane**
- ● **Crescentic glomerulonephritis**
- ○ **Normal findings**

What would be expected to be found on a biopsy sample?

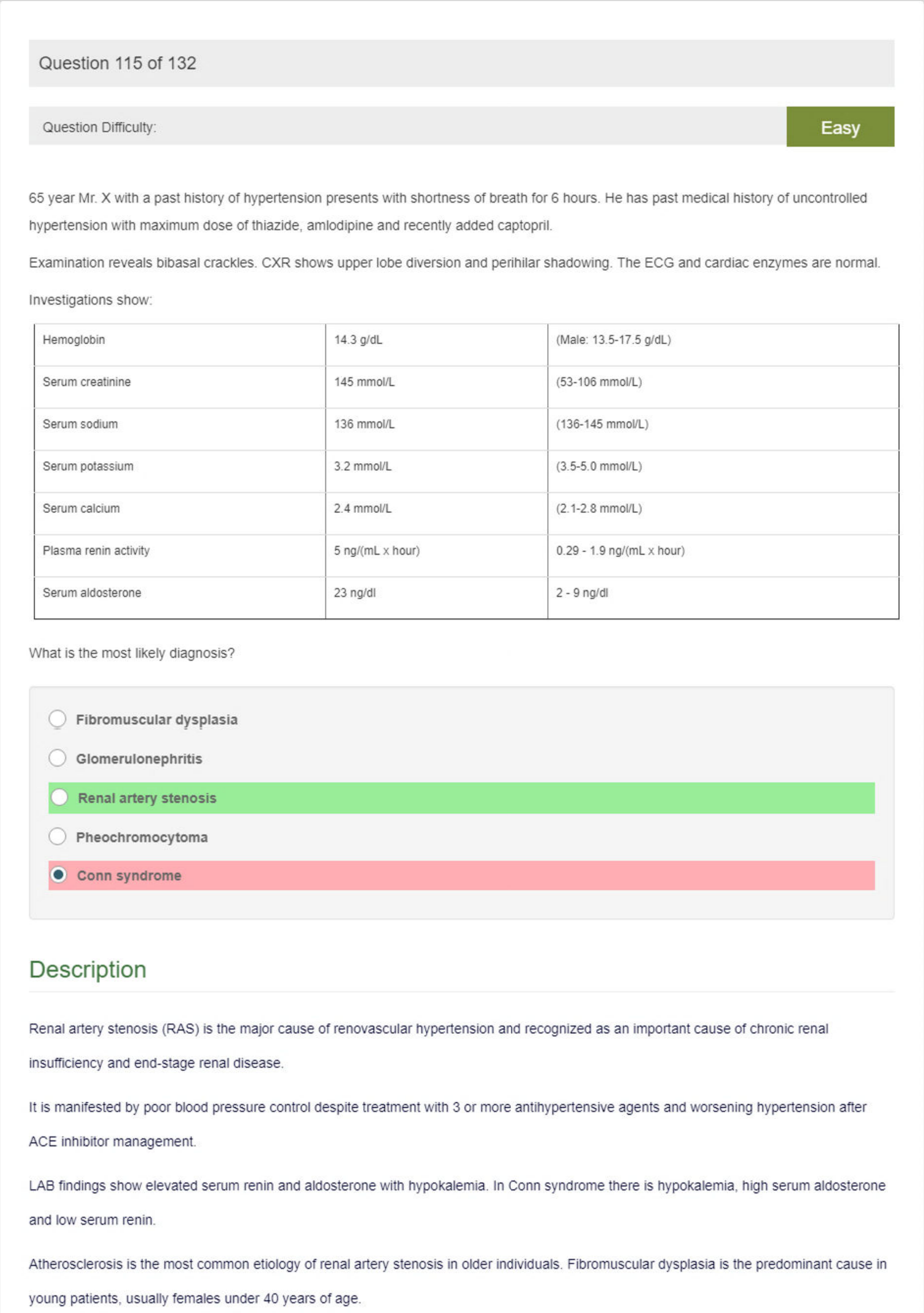
- ○ **Fusion epithelial foot processes**
- ○ **IgA deposition**
- ○ **Thickened glomerular basement membrane**
- ● **Crescentic glomerulonephritis**
- ○ **Normal findings**

Description

This patient has membranous glomerulonephritis (MGN). It is a slowly progressive disease of the kidney affecting mostly patients between ages of 30 and 50 years.

Membranous nephropathy is the most common renal paraneoplastic feature of adult malignancies. It is presented typically as nephrotic syndrome.

Light microscopy shows thickened glomerular basement membrane. Electron microscopy shows subepithelial deposits of IgG and C3.



Question 115 of 132

Question Difficulty: **Easy**

65 year Mr. X with a past history of hypertension presents with shortness of breath for 6 hours. He has past medical history of uncontrolled hypertension with maximum dose of thiazide, amlodipine and recently added captopril.

Examination reveals bibasal crackles. CXR shows upper lobe diversion and perihilar shadowing. The ECG and cardiac enzymes are normal.

Investigations show:

Hemoglobin	14.3 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	145 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	3.2 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.4 mmol/L	(2.1-2.8 mmol/L)
Plasma renin activity	5 ng/(mL x hour)	0.29 - 1.9 ng/(mL x hour)
Serum aldosterone	23 ng/dl	2 - 9 ng/dl

What is the most likely diagnosis?

- ○ **Fibromuscular dysplasia**
- ○ **Glomerulonephritis**
- ○ **Renal artery stenosis**
- ○ **Pheochromocytoma**
- ● **Conn syndrome**

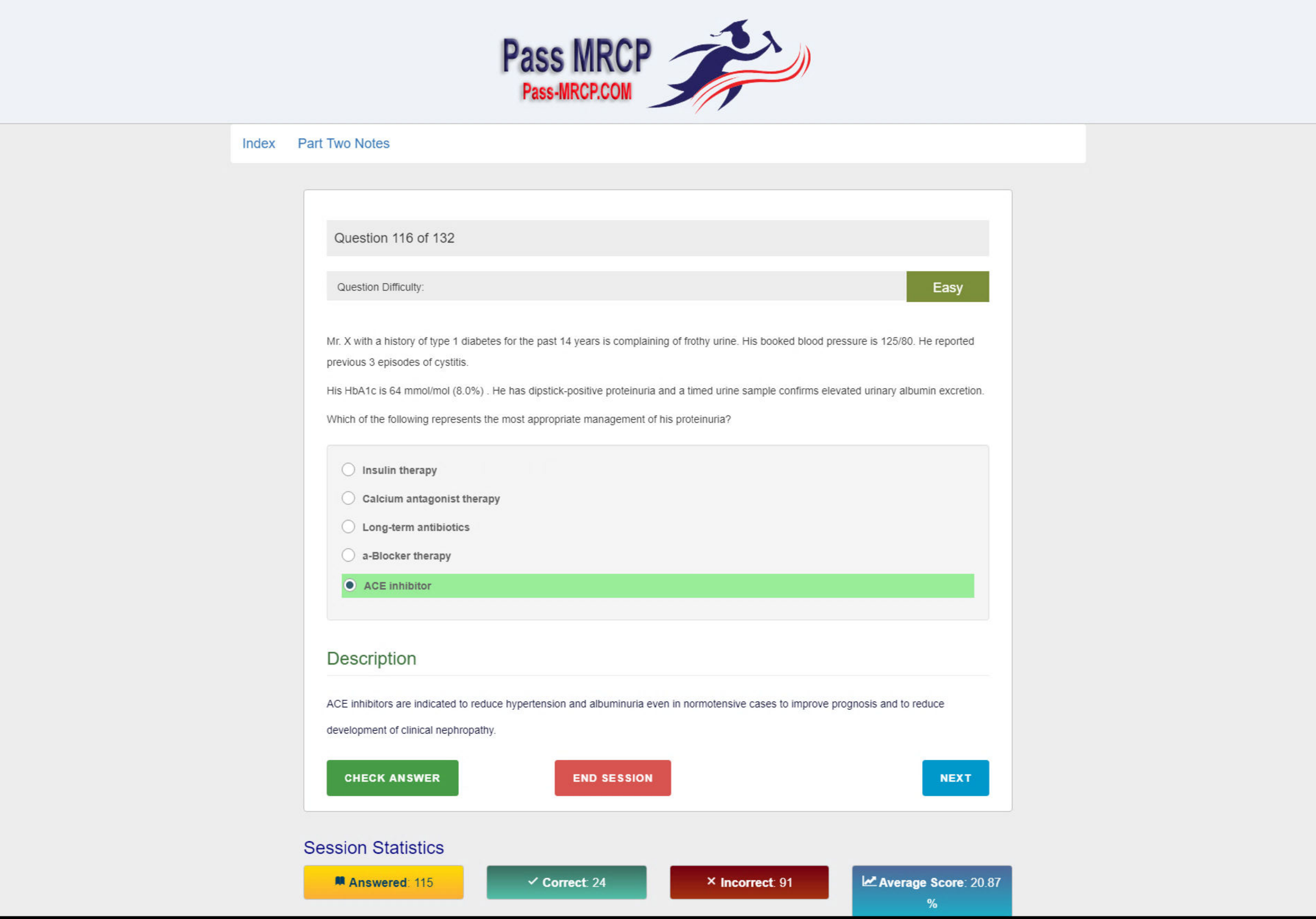
Description

Renal artery stenosis (RAS) is the major cause of renovascular hypertension and recognized as an important cause of chronic renal insufficiency and end-stage renal disease.

It is manifested by poor blood pressure control despite treatment with 3 or more antihypertensive agents and worsening hypertension after ACE inhibitor management.

LAB findings show elevated serum renin and aldosterone with hypokalemia. In Conn syndrome there is hypokalemia, high serum aldosterone and low serum renin.

Atherosclerosis is the most common etiology of renal artery stenosis in older individuals. Fibromuscular dysplasia is the predominant cause in young patients, usually females under 40 years of age.



Question 116 of 132

Question Difficulty: Easy

Mr. X with a history of type 1 diabetes for the past 14 years is complaining of frothy urine. His booked blood pressure is 125/80. He reported previous 3 episodes of cystitis.

His HbA1c is 64 mmol/mol (8.0%) . He has dipstick-positive proteinuria and a timed urine sample confirms elevated urinary albumin excretion.

Which of the following represents the most appropriate management of his proteinuria?

- ○ **Insulin therapy**
- ○ **Calcium antagonist therapy**
- ○ **Long-term antibiotics**
- ○ **a-Blocker therapy**
- ● **ACE inhibitor**

Description

ACE inhibitors are indicated to reduce hypertension and albuminuria even in normotensive cases to improve prognosis and to reduce development of clinical nephropathy.

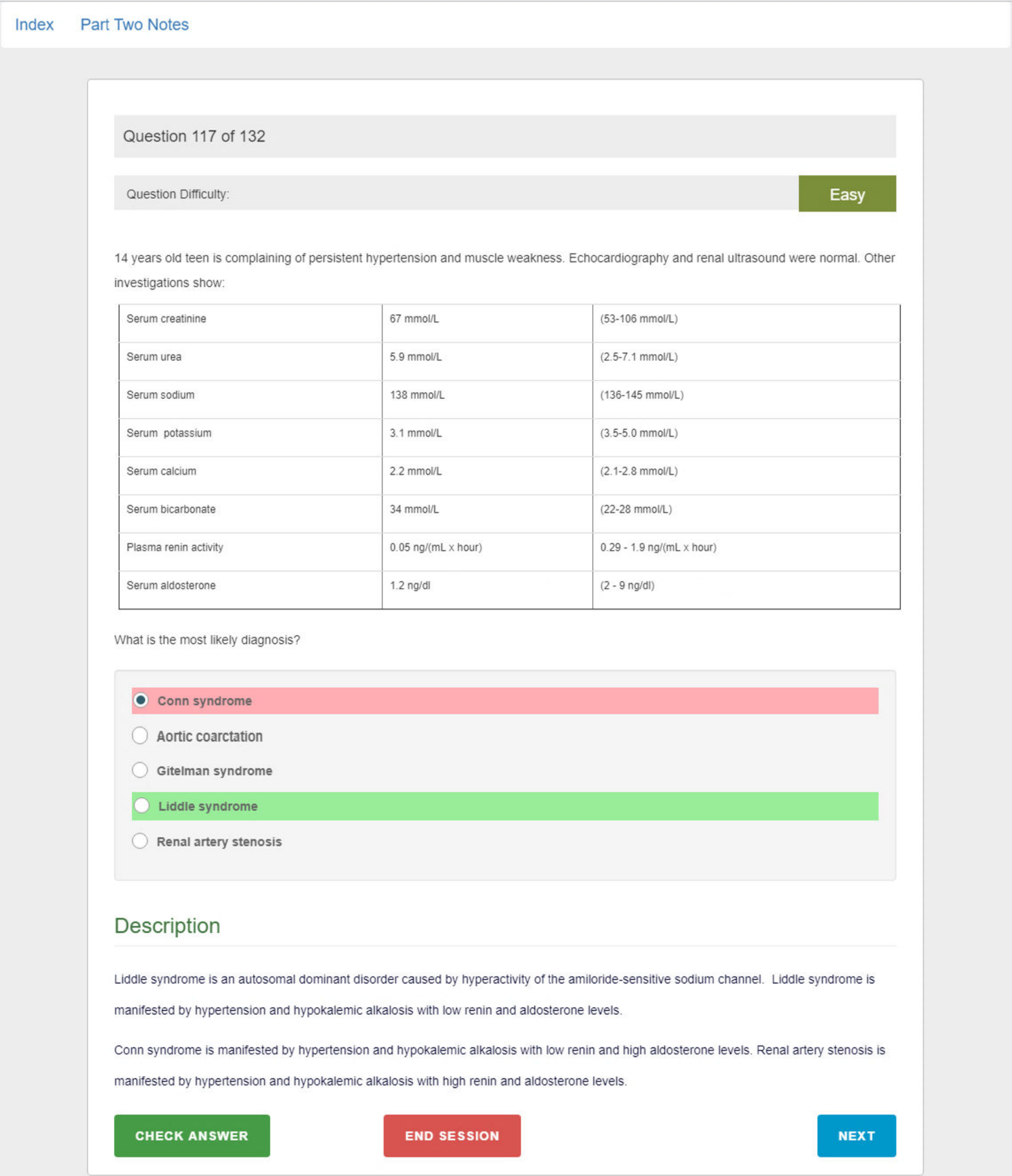
Session Statistics

Answered: 115

✓ **Correct**: 24

× **Incorrect**: 91

Average Score: 20.87 %



Question 117 of 132

Question Difficulty: **Easy**

14 years old teen is complaining of persistent hypertension and muscle weakness. Echocardiography and renal ultrasound were normal. Other investigations show:

Serum creatinine	67 mmol/L	(53-106 mmol/L)
Serum urea	5.9 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	138 mmol/L	(136-145 mmol/L)
Serum potassium	3.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.2 mmol/L	(2.1-2.8 mmol/L)
Serum bicarbonate	34 mmol/L	(22-28 mmol/L)
Plasma renin activity	0.05 ng/(mL x hour)	0.29 - 1.9 ng/(mL x hour)
Serum aldosterone	1.2 ng/dl	(2 - 9 ng/dl)

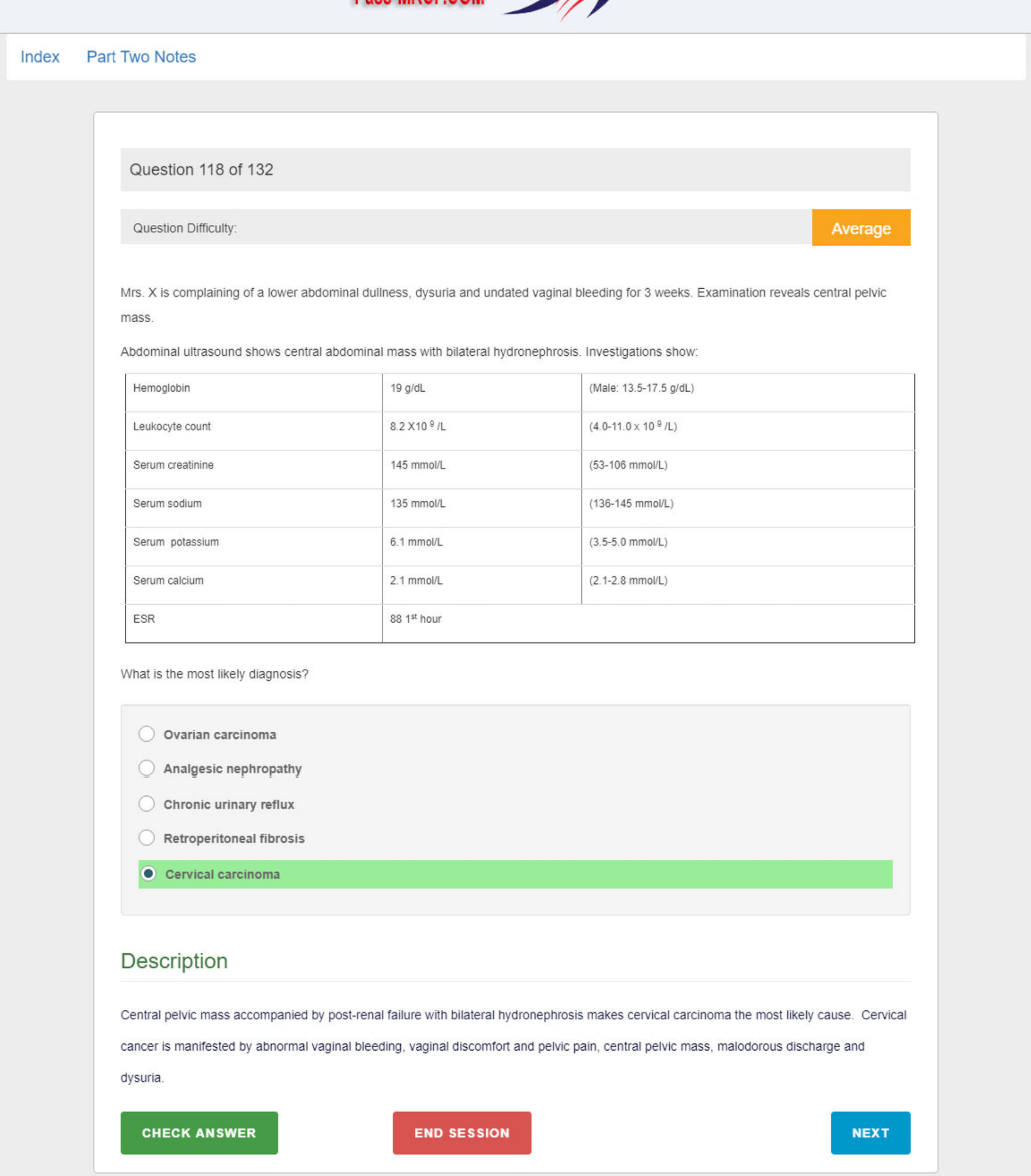
What is the most likely diagnosis?

- ● **Conn syndrome**
- ○ **Aortic coarctation**
- ○ **Gitelman syndrome**
- ○ **Liddle syndrome**
- ○ **Renal artery stenosis**

Description

Liddle syndrome is an autosomal dominant disorder caused by hyperactivity of the amiloride-sensitive sodium channel. Liddle syndrome is manifested by hypertension and hypokalemic alkalosis with low renin and aldosterone levels.

Conn syndrome is manifested by hypertension and hypokalemic alkalosis with low renin and high aldosterone levels. Renal artery stenosis is manifested by hypertension and hypokalemic alkalosis with high renin and aldosterone levels.



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Question Difficulty: **Average**

Mrs. X is complaining of a lower abdominal dullness, dysuria and undated vaginal bleeding for 3 weeks. Examination reveals central pelvic mass.

Abdominal ultrasound shows central abdominal mass with bilateral hydronephrosis. Investigations show:

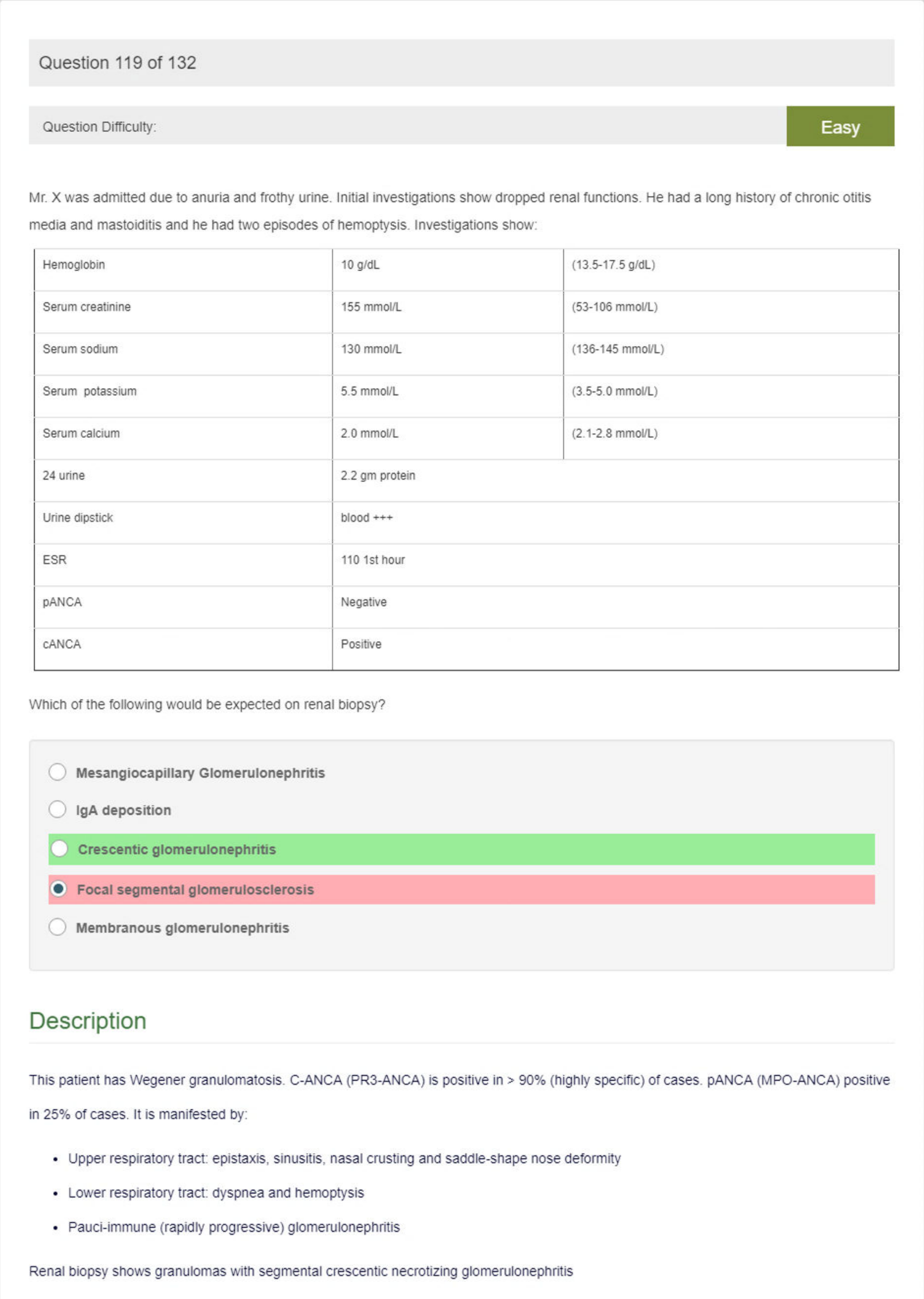
Hemoglobin	19 g/dL	(Male: 13.5-17.5 g/dL)
Leukocyte count	8.2 X10 ^{9} /L	(4.0-11.0 x 10 ^{9} /L)
Serum creatinine	145 mmol/L	(53-106 mmol/L)
Serum sodium	135 mmol/L	(136-145 mmol/L)
Serum potassium	6.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.1 mmol/L	(2.1-2.8 mmol/L)
ESR	88 1st hour	

What is the most likely diagnosis?

- ○ **Ovarian carcinoma**
- ○ **Analgesic nephropathy**
- ○ **Chronic urinary reflux**
- ○ **Retroperitoneal fibrosis**
- ● **Cervical carcinoma**

Description

Central pelvic mass accompanied by post-renal failure with bilateral hydronephrosis makes cervical carcinoma the most likely cause. Cervical cancer is manifested by abnormal vaginal bleeding, vaginal discomfort and pelvic pain, central pelvic mass, malodorous discharge and dysuria.



Question 119 of 132

Question Difficulty: **Easy**

Mr. X was admitted due to anuria and frothy urine. Initial investigations show dropped renal functions. He had a long history of chronic otitis media and mastoiditis and he had two episodes of hemoptysis. Investigations show:

Hemoglobin	10 g/dL	(13.5-17.5 g/dL)
Serum creatinine	155 mmol/L	(53-106 mmol/L)
Serum sodium	130 mmol/L	(136-145 mmol/L)
Serum potassium	5.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.0 mmol/L	(2.1-2.8 mmol/L)
24 urine	2.2 gm protein	
Urine dipstick	blood +++	
ESR	110 1st hour	
pANCA	Negative	
cANCA	Positive	

Which of the following would be expected on renal biopsy?

○ **Mesangiocapillary Glomerulonephritis**

○ **IgA deposition**

○ **Crescentic glomerulonephritis**

● **Focal segmental glomerulosclerosis**

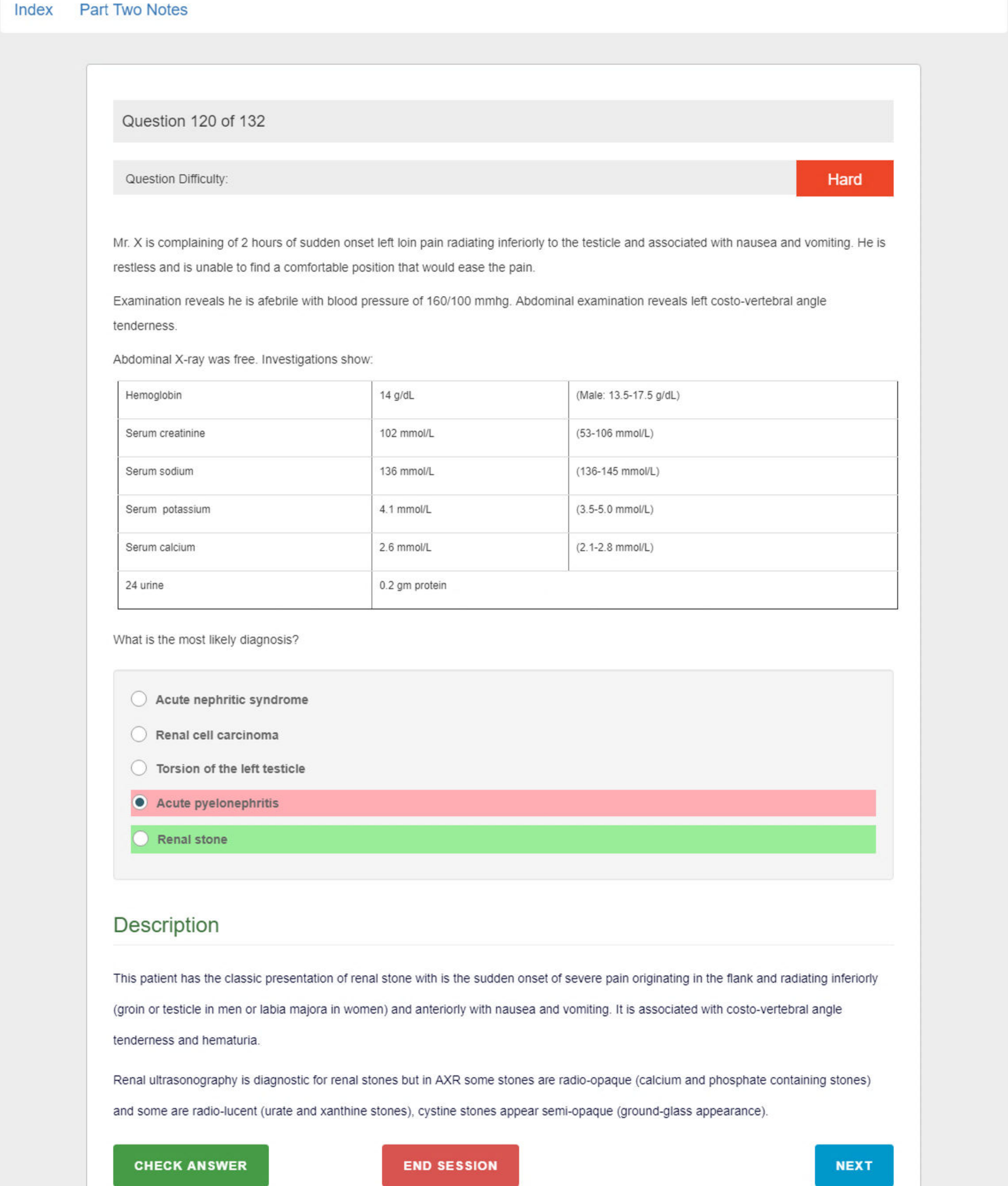
○ **Membranous glomerulonephritis**

Description

This patient has Wegener granulomatosis. C-ANCA (PR3-ANCA) is positive in > 90% (highly specific) of cases. pANCA (MPO-ANCA) positive in 25% of cases. It is manifested by:

- Upper respiratory tract: epistaxis, sinusitis, nasal crusting and saddle-shape nose deformity
- Lower respiratory tract: dyspnea and hemoptysis
- Pauci-immune (rapidly progressive) glomerulonephritis

Renal biopsy shows granulomas with segmental crescentic necrotizing glomerulonephritis



Question 120 of 132

Question Difficulty: Hard

Mr. X is complaining of 2 hours of sudden onset left loin pain radiating inferiorly to the testicle and associated with nausea and vomiting. He is restless and is unable to find a comfortable position that would ease the pain.

Examination reveals he is afebrile with blood pressure of 160/100 mmhg. Abdominal examination reveals left costo-vertebral angle tenderness.

Abdominal X-ray was free. Investigations show:

Hemoglobin	14 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	102 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.6 mmol/L	(2.1-2.8 mmol/L)
24 urine	0.2 gm protein	

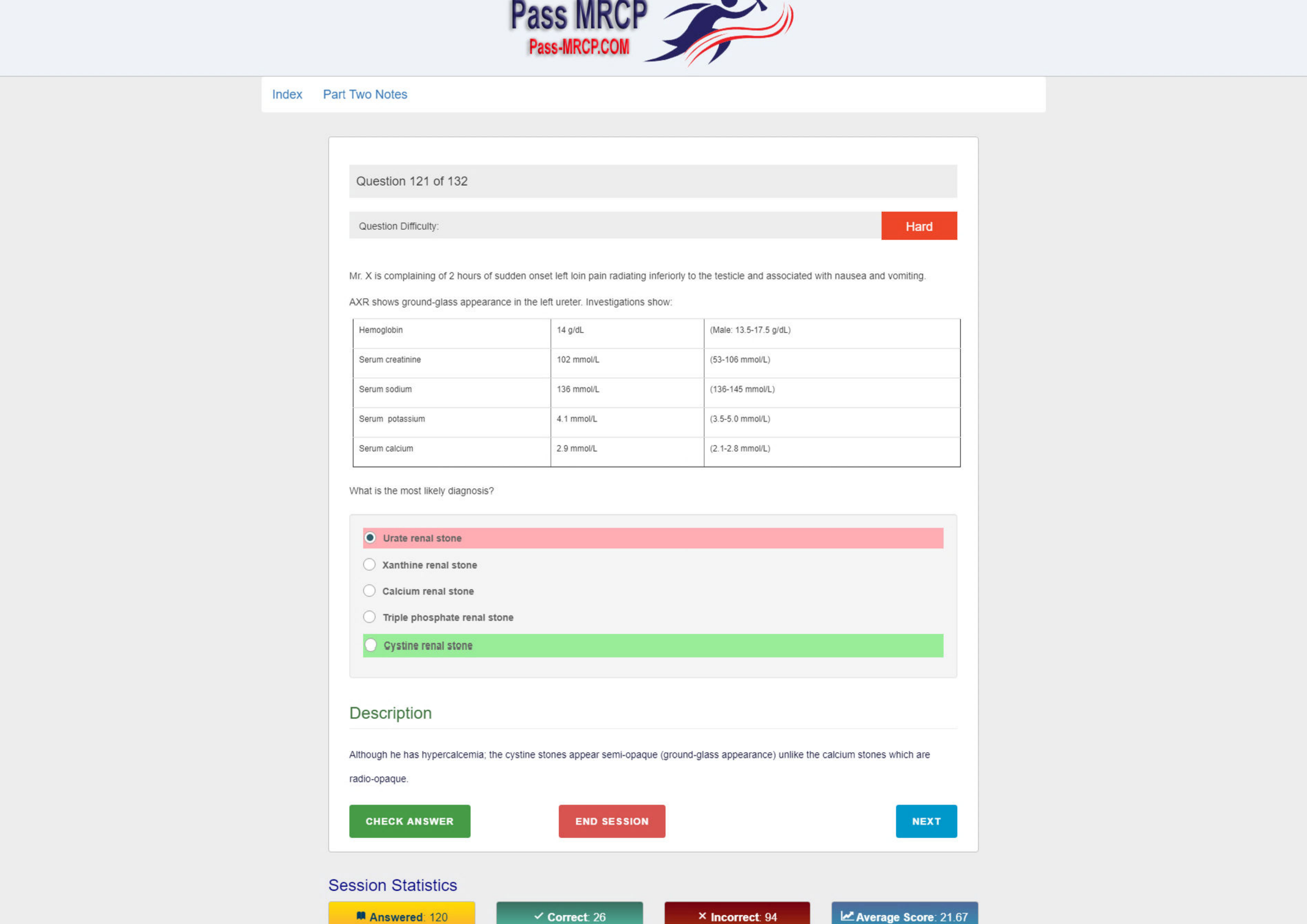
What is the most likely diagnosis?

- ○ **Acute nephritic syndrome**
- ○ **Renal cell carcinoma**
- ○ **Torsion of the left testicle**
- ● **Acute pyelonephritis**
- ○ **Renal stone**

Description

This patient has the classic presentation of renal stone with is the sudden onset of severe pain originating in the flank and radiating inferiorly (groin or testicle in men or labia majora in women) and anteriorly with nausea and vomiting. It is associated with costo-vertebral angle tenderness and hematuria.

Renal ultrasonography is diagnostic for renal stones but in AXR some stones are radio-opaque (calcium and phosphate containing stones) and some are radio-lucent (urate and xanthine stones), cystine stones appear semi-opaque (ground-glass appearance).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Part Two Notes

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Question Difficulty: **Hard**

Mr. X is complaining of 2 hours of sudden onset left loin pain radiating inferiorly to the testicle and associated with nausea and vomiting.

AXR shows ground-glass appearance in the left ureter. Investigations show:

Hemoglobin	14 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	102 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2.9 mmol/L	(2.1-2.8 mmol/L)

What is the most likely diagnosis?

- ● **Urate renal stone**
- ○ **Xanthine renal stone**
- ○ **Calcium renal stone**
- ○ **Triple phosphate renal stone**
- ○ **Cystine renal stone**

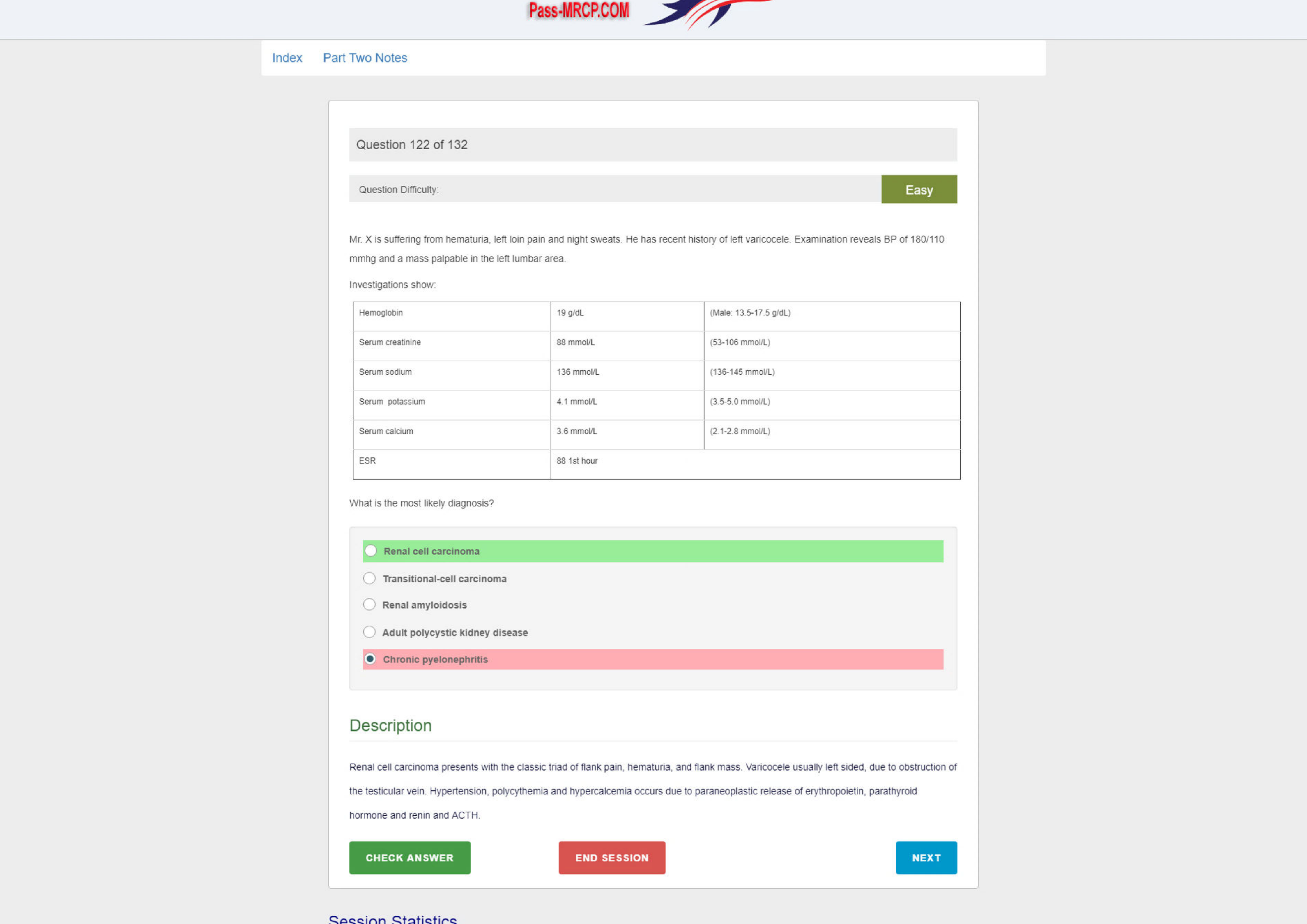
Description

Although he has hypercalcemia; the cystine stones appear semi-opaque (ground-glass appearance) unlike the calcium stones which are radio-opaque.

CHECK ANSWER
END SESSION
NEXT

Session Statistics

Answered: 120
✓ Correct: 26
× Incorrect: 94
Average Score: 21.67



Question 122 of 132

Question Difficulty: Easy

Mr. X is suffering from hematuria, left loin pain and night sweats. He has recent history of left varicocele. Examination reveals BP of 180/110 mmhg and a mass palpable in the left lumbar area.

Investigations show:

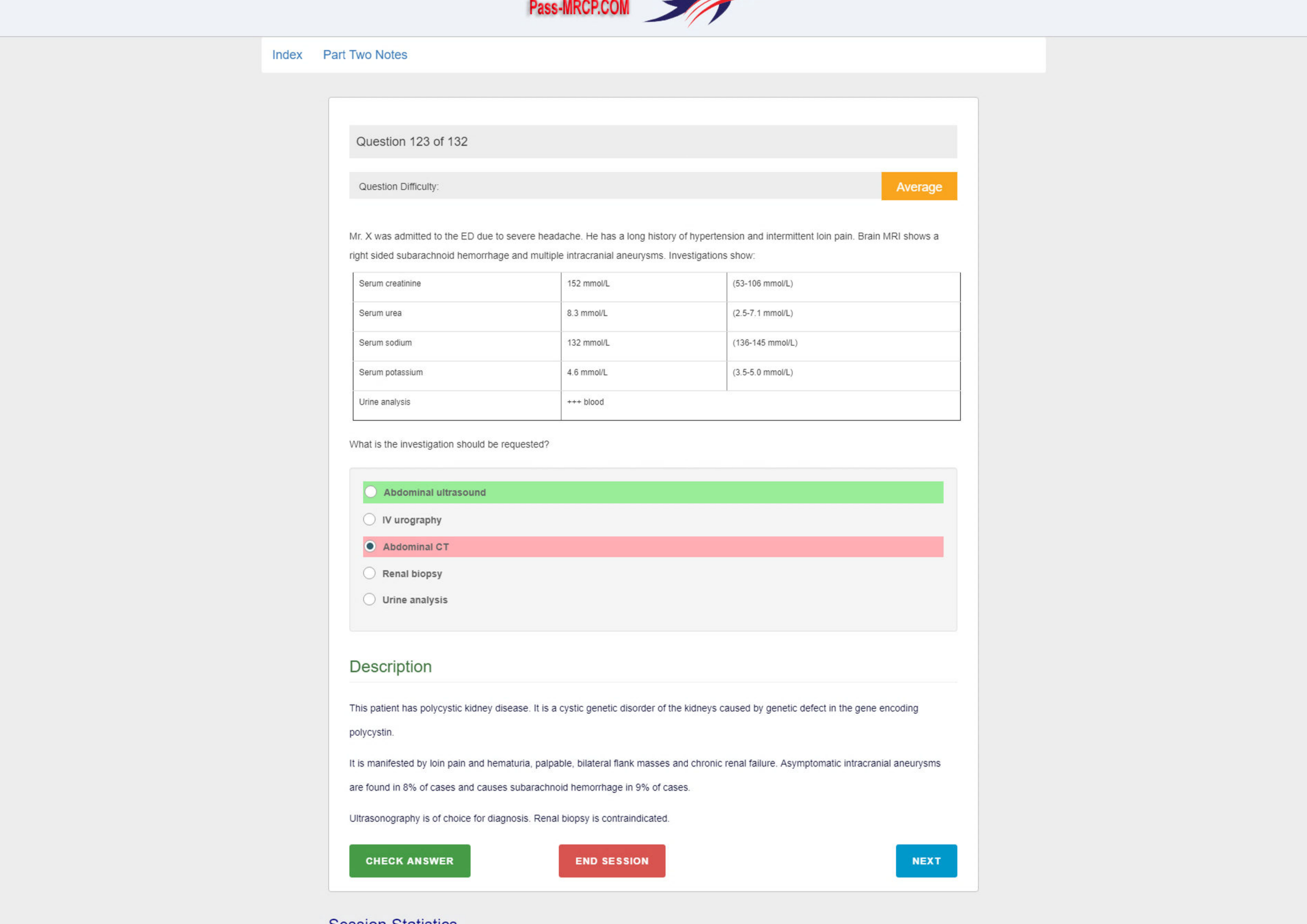
Hemoglobin	19 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	88 mmol/L	(53-106 mmol/L)
Serum sodium	136 mmol/L	(136-145 mmol/L)
Serum potassium	4.1 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	3.6 mmol/L	(2.1-2.8 mmol/L)
ESR	88 1st hour	

What is the most likely diagnosis?

- ○ **Renal cell carcinoma**
- ○ **Transitional-cell carcinoma**
- ○ **Renal amyloidosis**
- ○ **Adult polycystic kidney disease**
- ● **Chronic pyelonephritis**

Description

Renal cell carcinoma presents with the classic triad of flank pain, hematuria, and flank mass. Varicocele usually left sided, due to obstruction of the testicular vein. Hypertension, polycythemia and hypercalcemia occurs due to paraneoplastic release of erythropoietin, parathyroid hormone and renin and ACTH.



Question 123 of 132

Question Difficulty: Average

Mr. X was admitted to the ED due to severe headache. He has a long history of hypertension and intermittent loin pain. Brain MRI shows a right sided subarachnoid hemorrhage and multiple intracranial aneurysms. Investigations show:

Serum creatinine	152 mmol/L	(53-106 mmol/L)
Serum urea	8.3 mmol/L	(2.5-7.1 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	4.6 mmol/L	(3.5-5.0 mmol/L)
Urine analysis	+++ blood	

What is the investigation should be requested?

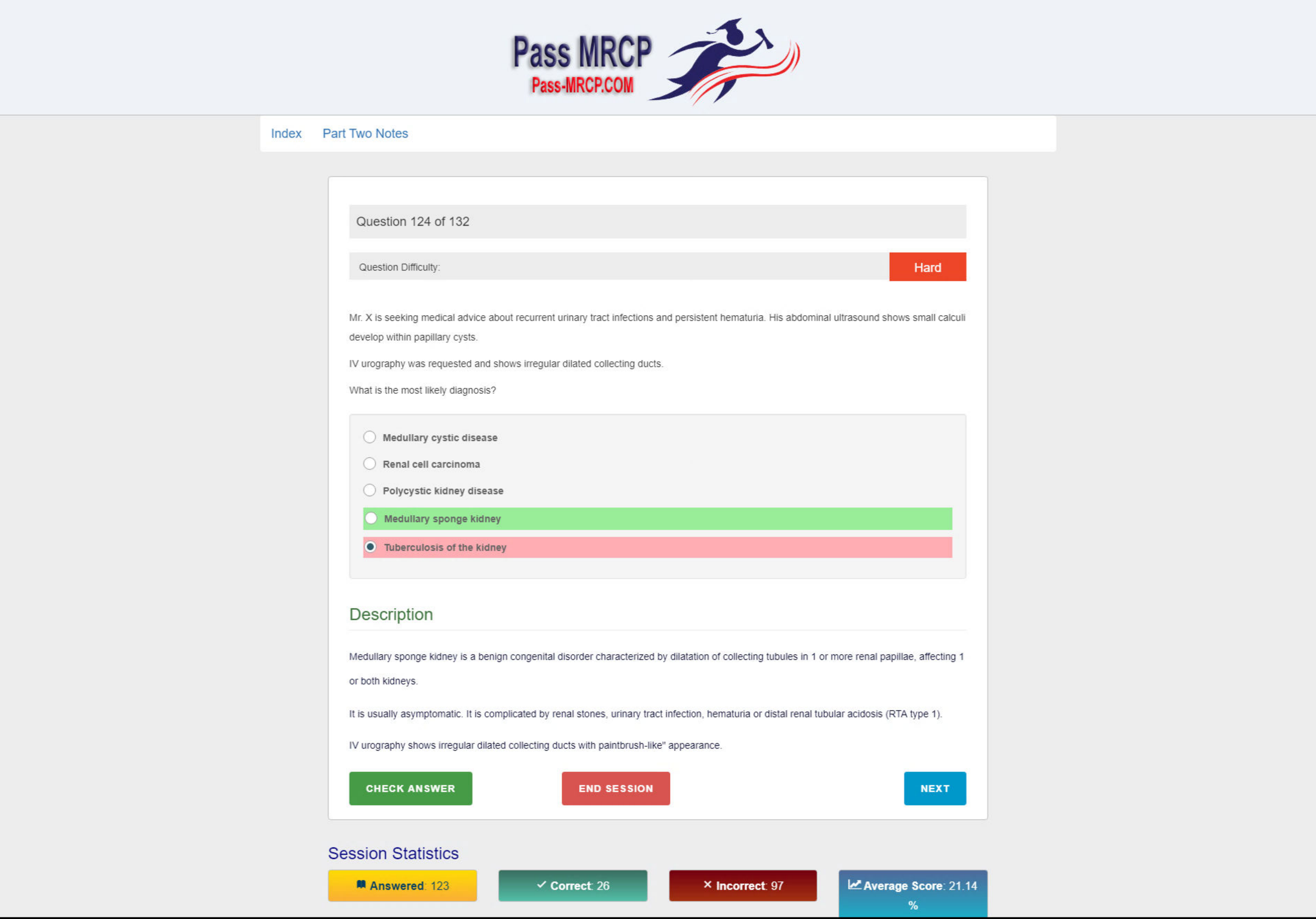
- ○ **Abdominal ultrasound**
- ○ **IV urography**
- ● **Abdominal CT**
- ○ **Renal biopsy**
- ○ **Urine analysis**

Description

This patient has polycystic kidney disease. It is a cystic genetic disorder of the kidneys caused by genetic defect in the gene encoding polycystin.

It is manifested by loin pain and hematuria, palpable, bilateral flank masses and chronic renal failure. Asymptomatic intracranial aneurysms are found in 8% of cases and causes subarachnoid hemorrhage in 9% of cases.

Ultrasonography is of choice for diagnosis. Renal biopsy is contraindicated.



Question 124 of 132

Question Difficulty: Hard

Mr. X is seeking medical advice about recurrent urinary tract infections and persistent hematuria. His abdominal ultrasound shows small calculi develop within papillary cysts.

IV urography was requested and shows irregular dilated collecting ducts.

What is the most likely diagnosis?

○ Medullary cystic disease
○ Renal cell carcinoma
○ Polycystic kidney disease
○ Medullary sponge kidney
● Tuberculosis of the kidney

Description

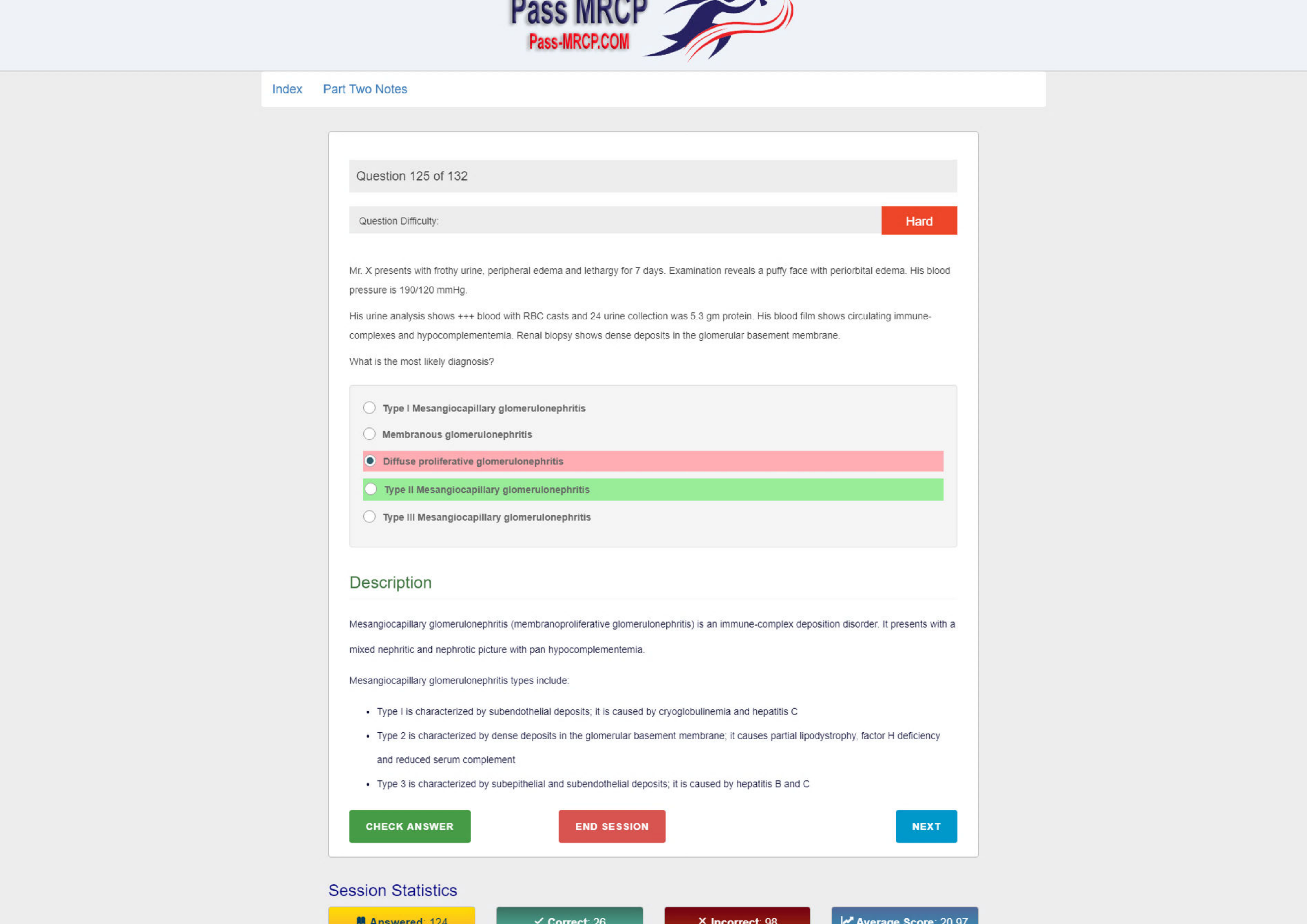
Medullary sponge kidney is a benign congenital disorder characterized by dilatation of collecting tubules in 1 or more renal papillae, affecting 1 or both kidneys.

It is usually asymptomatic. It is complicated by renal stones, urinary tract infection, hematuria or distal renal tubular acidosis (RTA type 1).

IV urography shows irregular dilated collecting ducts with paintbrush-like" appearance.

Session Statistics

Answered: 123
✓ Correct: 26
✕ Incorrect: 97
Average Score: 21.14 %



Question 125 of 132

Question Difficulty: Hard

Mr. X presents with frothy urine, peripheral edema and lethargy for 7 days. Examination reveals a puffy face with periorbital edema. His blood pressure is 190/120 mmHg.

His urine analysis shows +++ blood with RBC casts and 24 urine collection was 5.3 gm protein. His blood film shows circulating immune-complexes and hypocomplementemia. Renal biopsy shows dense deposits in the glomerular basement membrane.

What is the most likely diagnosis?

○ **Type I Mesangiocapillary glomerulonephritis**
○ **Membranous glomerulonephritis**
● **Diffuse proliferative glomerulonephritis**
○ **Type II Mesangiocapillary glomerulonephritis**
○ **Type III Mesangiocapillary glomerulonephritis**

Description

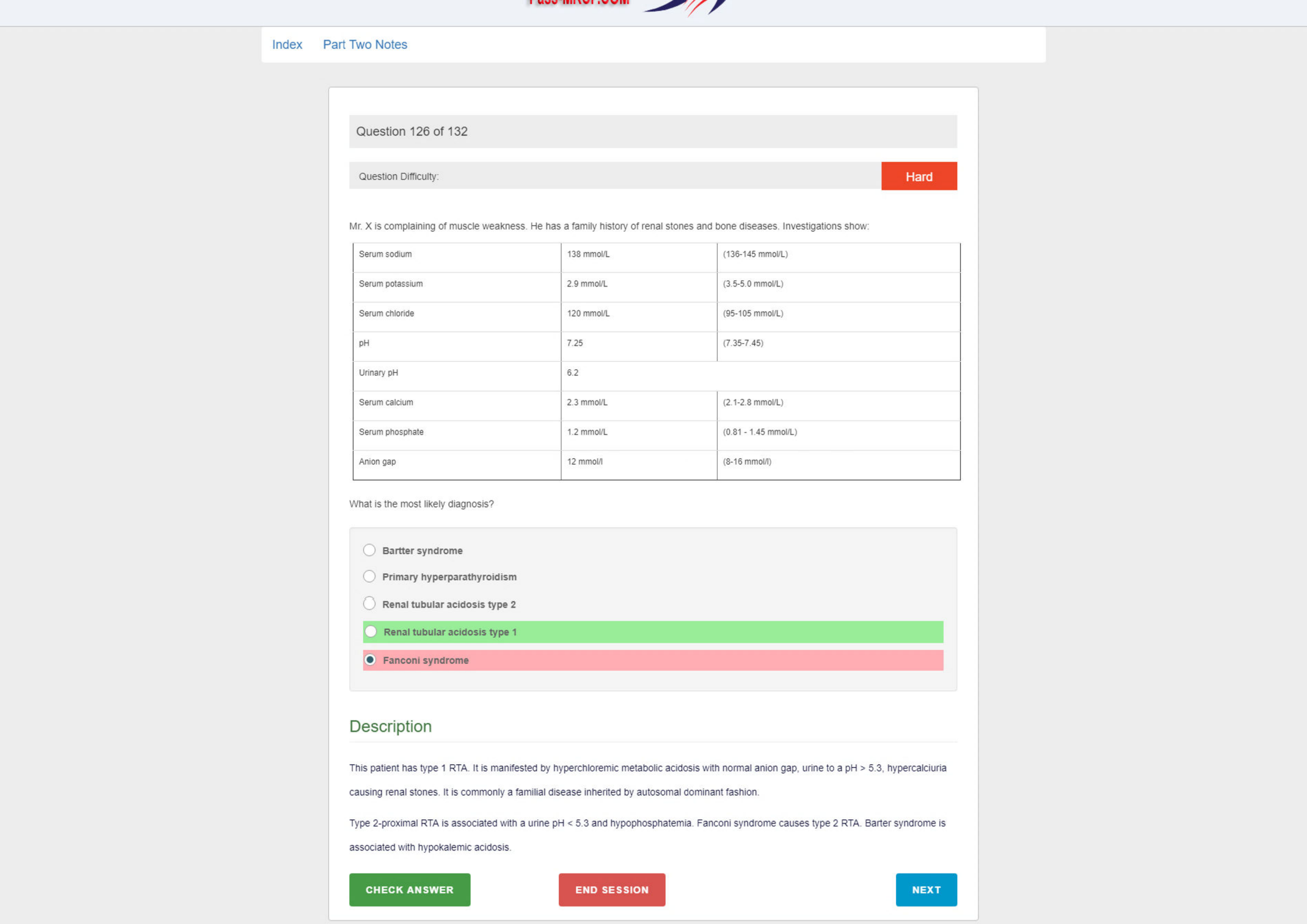
Mesangiocapillary glomerulonephritis (membranoproliferative glomerulonephritis) is an immune-complex deposition disorder. It presents with a mixed nephritic and nephrotic picture with pan hypocomplementemia.

Mesangiocapillary glomerulonephritis types include:

- Type I is characterized by subendothelial deposits; it is caused by cryoglobulinemia and hepatitis C
- Type 2 is characterized by dense deposits in the glomerular basement membrane; it causes partial lipodystrophy, factor H deficiency and reduced serum complement
- Type 3 is characterized by subepithelial and subendothelial deposits; it is caused by hepatitis B and C

Session Statistics

Answered: 124
Correct: 26
Incorrect: 98
Average Score: 20.97



Question 126 of 132

Question Difficulty: **Hard**

Mr. X is complaining of muscle weakness. He has a family history of renal stones and bone diseases. Investigations show:

Serum sodium	138 mmol/L	(136-145 mmol/L)
Serum potassium	2.9 mmol/L	(3.5-5.0 mmol/L)
Serum chloride	120 mmol/L	(95-105 mmol/L)
pH	7.25	(7.35-7.45)
Urinary pH	6.2	
Serum calcium	2.3 mmol/L	(2.1-2.8 mmol/L)
Serum phosphate	1.2 mmol/L	(0.81 - 1.45 mmol/L)
Anion gap	12 mmol/l	(8-16 mmol/l)

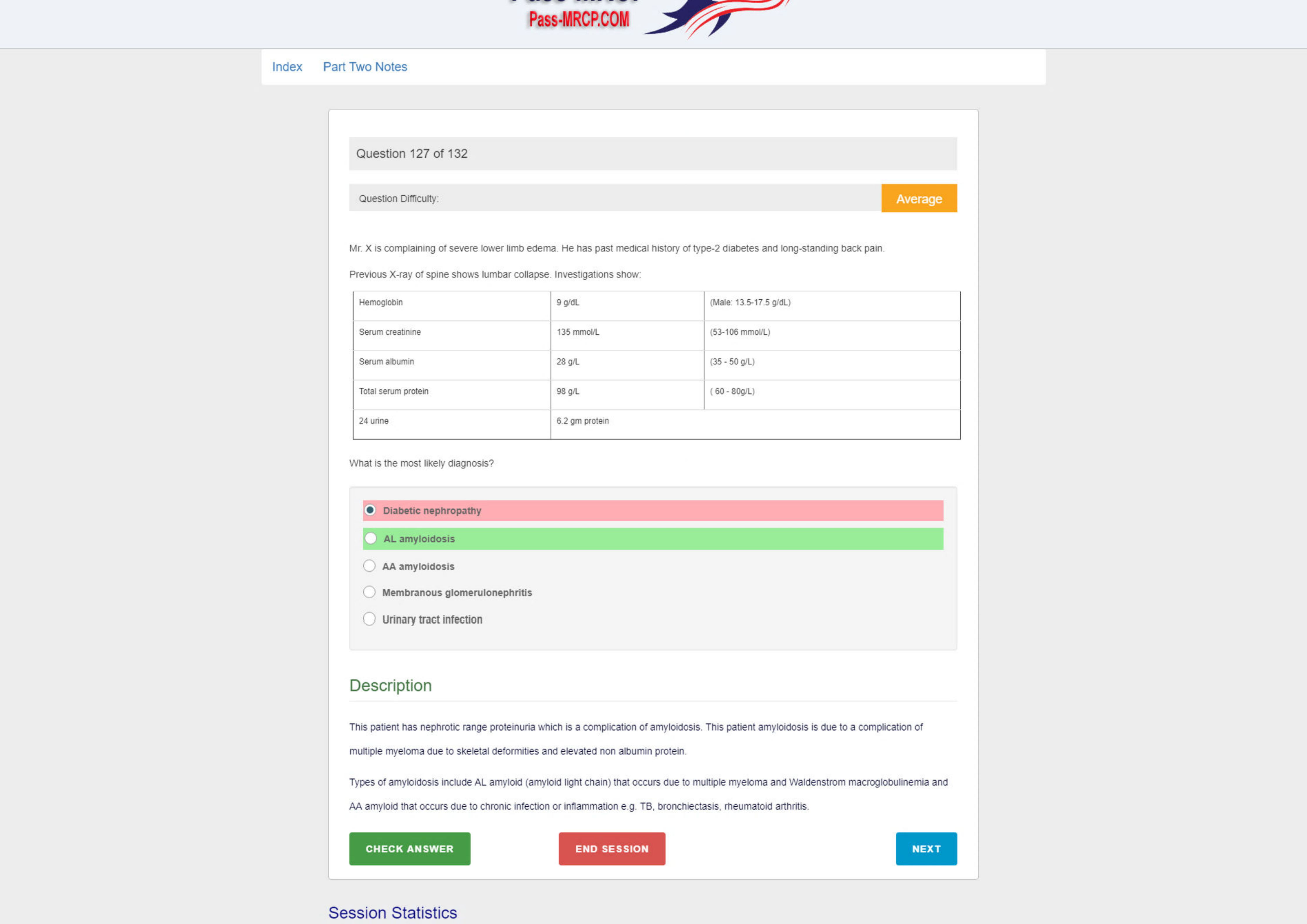
What is the most likely diagnosis?

- ○ **Bartter syndrome**
- ○ **Primary hyperparathyroidism**
- ○ **Renal tubular acidosis type 2**
- ○ **Renal tubular acidosis type 1**
- ● **Fanconi syndrome**

Description

This patient has type 1 RTA. It is manifested by hyperchloremic metabolic acidosis with normal anion gap, urine to a pH > 5.3, hypercalciuria causing renal stones. It is commonly a familial disease inherited by autosomal dominant fashion.

Type 2-proximal RTA is associated with a urine pH < 5.3 and hypophosphatemia. Fanconi syndrome causes type 2 RTA. Barter syndrome is associated with hypokalemic acidosis.



Question 127 of 132

Question Difficulty: Average

Mr. X is complaining of severe lower limb edema. He has past medical history of type-2 diabetes and long-standing back pain.

Previous X-ray of spine shows lumbar collapse. Investigations show:

Hemoglobin	9 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	135 mmol/L	(53-106 mmol/L)
Serum albumin	28 g/L	(35 - 50 g/L)
Total serum protein	98 g/L	(60 - 80g/L)
24 urine	6.2 gm protein	

What is the most likely diagnosis?

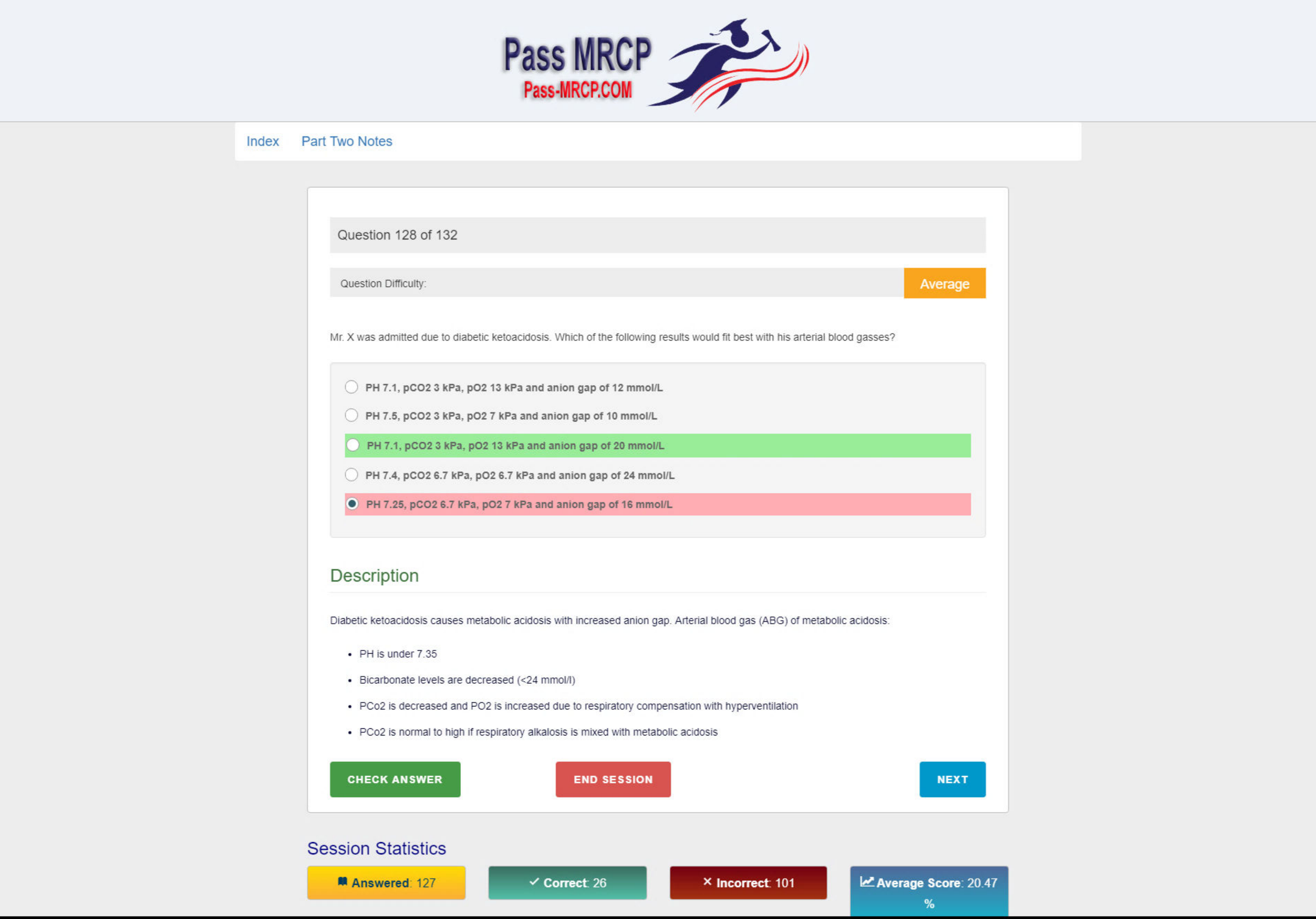
- ● Diabetic nephropathy
- ○ AL amyloidosis
- ○ AA amyloidosis
- ○ Membranous glomerulonephritis
- ○ Urinary tract infection

Description

This patient has nephrotic range proteinuria which is a complication of amyloidosis. This patient amyloidosis is due to a complication of multiple myeloma due to skeletal deformities and elevated non albumin protein.

Types of amyloidosis include AL amyloid (amyloid light chain) that occurs due to multiple myeloma and Waldenstrom macroglobulinemia and AA amyloid that occurs due to chronic infection or inflammation e.g. TB, bronchiectasis, rheumatoid arthritis.

Session Statistics



Question 128 of 132

Question Difficulty: Average

Mr. X was admitted due to diabetic ketoacidosis. Which of the following results would fit best with his arterial blood gasses?

○ **PH 7.1, pCO2 3 kPa, pO2 13 kPa and anion gap of 12 mmol/L**
○ **PH 7.5, pCO2 3 kPa, pO2 7 kPa and anion gap of 10 mmol/L**
○ **PH 7.1, pCO2 3 kPa, pO2 13 kPa and anion gap of 20 mmol/L**
○ **PH 7.4, pCO2 6.7 kPa, pO2 6.7 kPa and anion gap of 24 mmol/L**
● **PH 7.25, pCO2 6.7 kPa, pO2 7 kPa and anion gap of 16 mmol/L**

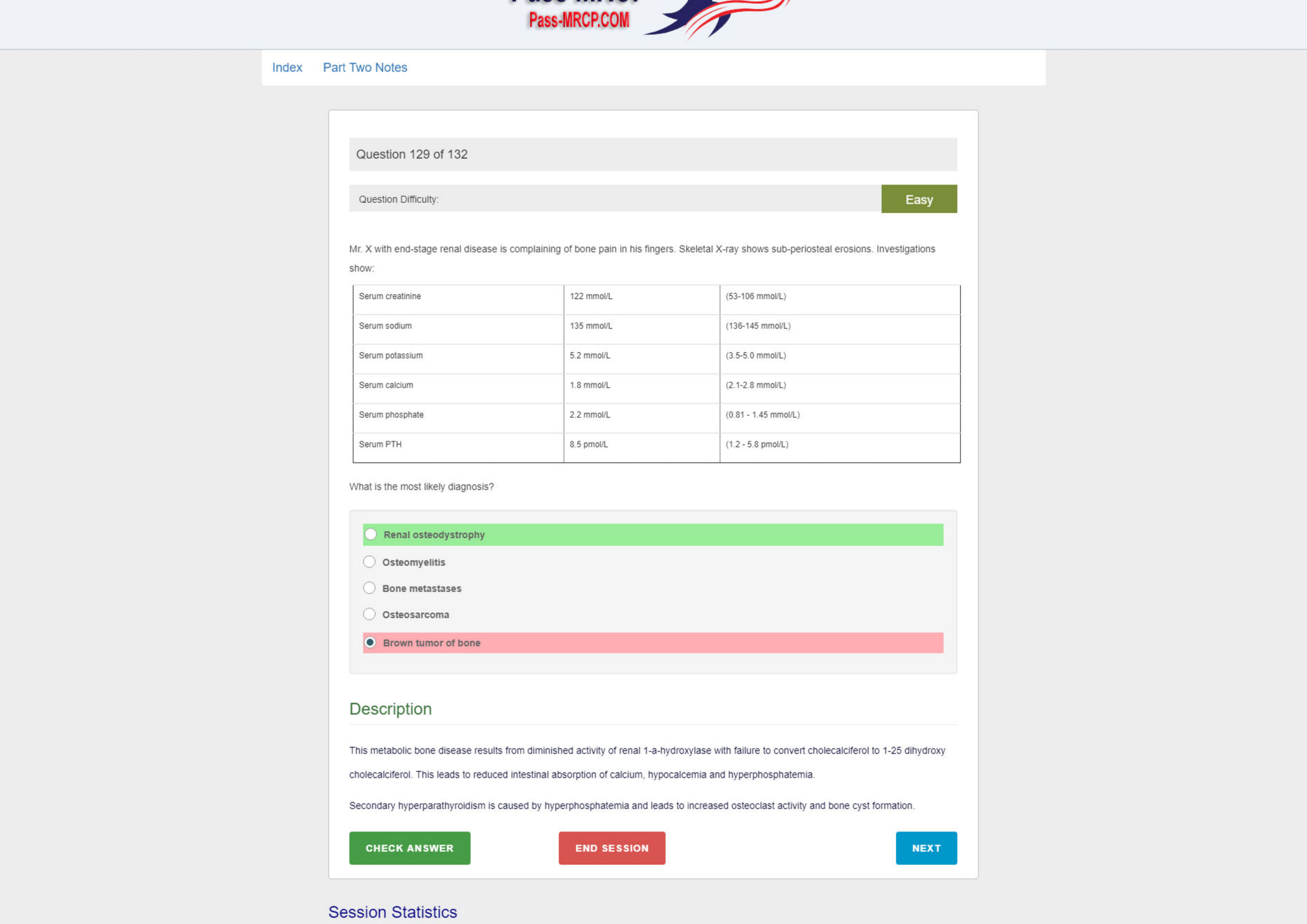
Description

Diabetic ketoacidosis causes metabolic acidosis with increased anion gap. Arterial blood gas (ABG) of metabolic acidosis:

- PH is under 7.35
- Bicarbonate levels are decreased (<24 mmol/l)
- PCo2 is decreased and PO2 is increased due to respiratory compensation with hyperventilation
- PCo2 is normal to high if respiratory alkalosis is mixed with metabolic acidosis

Session Statistics

Answered: 127
Correct: 26
Incorrect: 101
Average Score: 20.47 %



Question 129 of 132

Question Difficulty: Easy

Mr. X with end-stage renal disease is complaining of bone pain in his fingers. Skeletal X-ray shows sub-periosteal erosions. Investigations show:

Serum creatinine	122 mmol/L	(53-106 mmol/L)
Serum sodium	135 mmol/L	(136-145 mmol/L)
Serum potassium	5.2 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.8 mmol/L	(2.1-2.8 mmol/L)
Serum phosphate	2.2 mmol/L	(0.81 - 1.45 mmol/L)
Serum PTH	8.5 pmol/L	(1.2 - 5.8 pmol/L)

What is the most likely diagnosis?

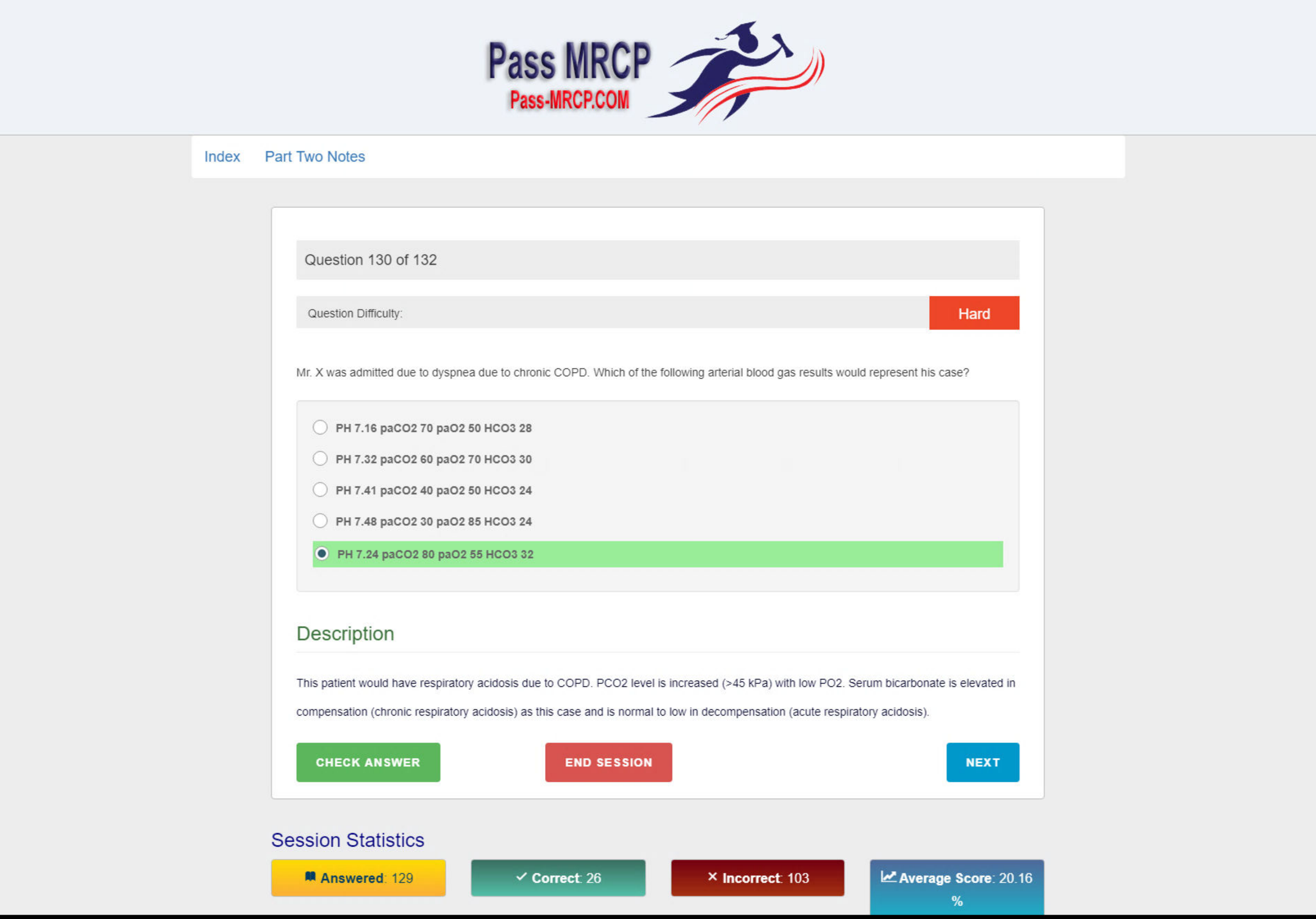
- ○ **Renal osteodystrophy**
- ○ **Osteomyelitis**
- ○ **Bone metastases**
- ○ **Osteosarcoma**
- ● **Brown tumor of bone**

Description

This metabolic bone disease results from diminished activity of renal 1-a-hydroxylase with failure to convert cholecalciferol to 1-25 dihydroxy cholecalciferol. This leads to reduced intestinal absorption of calcium, hypocalcemia and hyperphosphatemia.

Secondary hyperparathyroidism is caused by hyperphosphatemia and leads to increased osteoclast activity and bone cyst formation.

Session Statistics



Question 130 of 132

Question Difficulty: **Hard**

Mr. X was admitted due to dyspnea due to chronic COPD. Which of the following arterial blood gas results would represent his case?

- ○ **PH 7.16 paCO2 70 paO2 50 HCO3 28**
- ○ **PH 7.32 paCO2 60 paO2 70 HCO3 30**
- ○ **PH 7.41 paCO2 40 paO2 50 HCO3 24**
- ○ **PH 7.48 paCO2 30 paO2 85 HCO3 24**
- ● **PH 7.24 paCO2 80 paO2 55 HCO3 32**

Description

This patient would have respiratory acidosis due to COPD. PCO2 level is increased (>45 kPa) with low PO2. Serum bicarbonate is elevated in compensation (chronic respiratory acidosis) as this case and is normal to low in decompensation (acute respiratory acidosis).

Session Statistics

Answered: 129

✓ **Correct**: 26

✕ **Incorrect**: 103

Average Score: 20.16 %

Question 131 of 132

Question Difficulty: **Easy**

Mr. X is complaining of progressive swollen feet and puffy eyelids. He has past medical history of stage 3 lung cancer and on management with chemotherapy.

Examination shows he has gross pitting edema of legs, ascites and facial and hand. CXR shows unilateral pleural effusion. Investigations show:

Hemoglobin	9 g/dL	(13.5-17.5 g/dL)
Serum creatinine	186 mmol/L	(53-106 mmol/L)
Serum sodium	129 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.9 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	7.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	28 g/L	(35 - 50 g/L)
24 urine	5.3 gm protein	

Renal biopsy sample shows subepithelial deposits of IgG and C3 under electron microscopy.

What is the most likely diagnosis?

Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	1.9 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	7.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	28 g/L	(35 - 50 g/L)
24 urine	5.3 gm protein	

Renal biopsy sample shows subepithelial deposits of IgG and C3 under electron microscopy.

What is the most likely diagnosis?

● **Focal segmental glomerulosclerosis**

○ **Diffuse proliferative glomerulonephritis**

○ **Minimal-change nephropathy**

○ **Membranous glomerulonephritis**

○ **IgA nephropathy**

Description

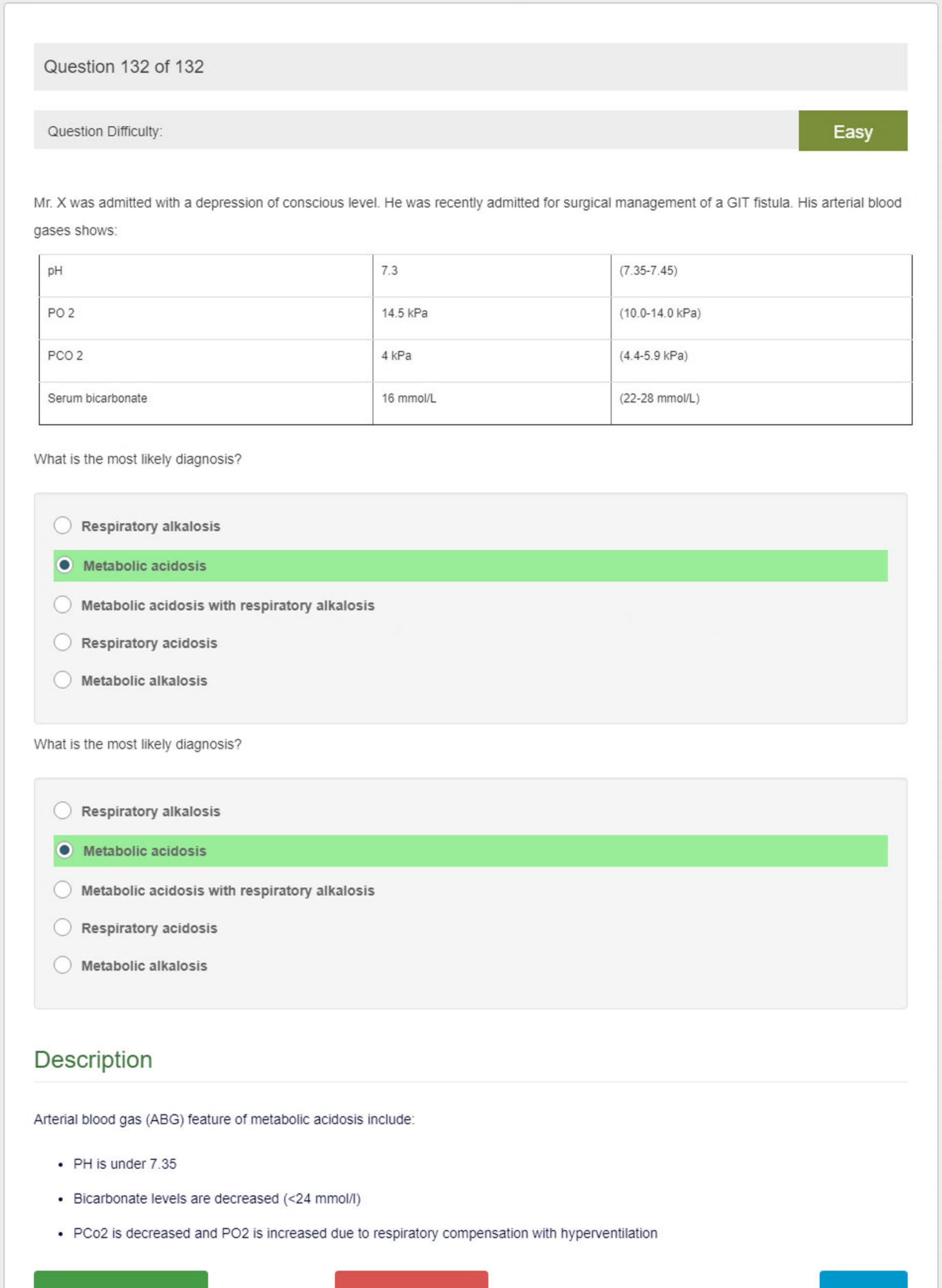
Membranous glomerulonephritis (MGN) is a slowly progressive disease of the kidney affecting mostly patients between ages of 30 and 50 years. Membranous nephropathy is the most common renal paraneoplastic feature of adult malignancies. It is presented typically as nephrotic syndrome.

Light microscopy shows thickened glomerular basement membrane. Electron microscopy shows subepithelial deposits of IgG and C3.

CHECK ANSWER END SESSION NEXT

Session Statistics

Answered: 130 ✓ **Correct**: 27 ✕ **Incorrect**: 103 **Average Score**: 20.77 %



Question 132 of 132

Question Difficulty: **Easy**

Mr. X was admitted with a depression of conscious level. He was recently admitted for surgical management of a GIT fistula. His arterial blood gases shows:

pH	7.3	(7.35-7.45)
PO 2	14.5 kPa	(10.0-14.0 kPa)
PCO 2	4 kPa	(4.4-5.9 kPa)
Serum bicarbonate	16 mmol/L	(22-28 mmol/L)

What is the most likely diagnosis?

- ○ **Respiratory alkalosis**
- ● **Metabolic acidosis**
- ○ **Metabolic acidosis with respiratory alkalosis**
- ○ **Respiratory acidosis**
- ○ **Metabolic alkalosis**

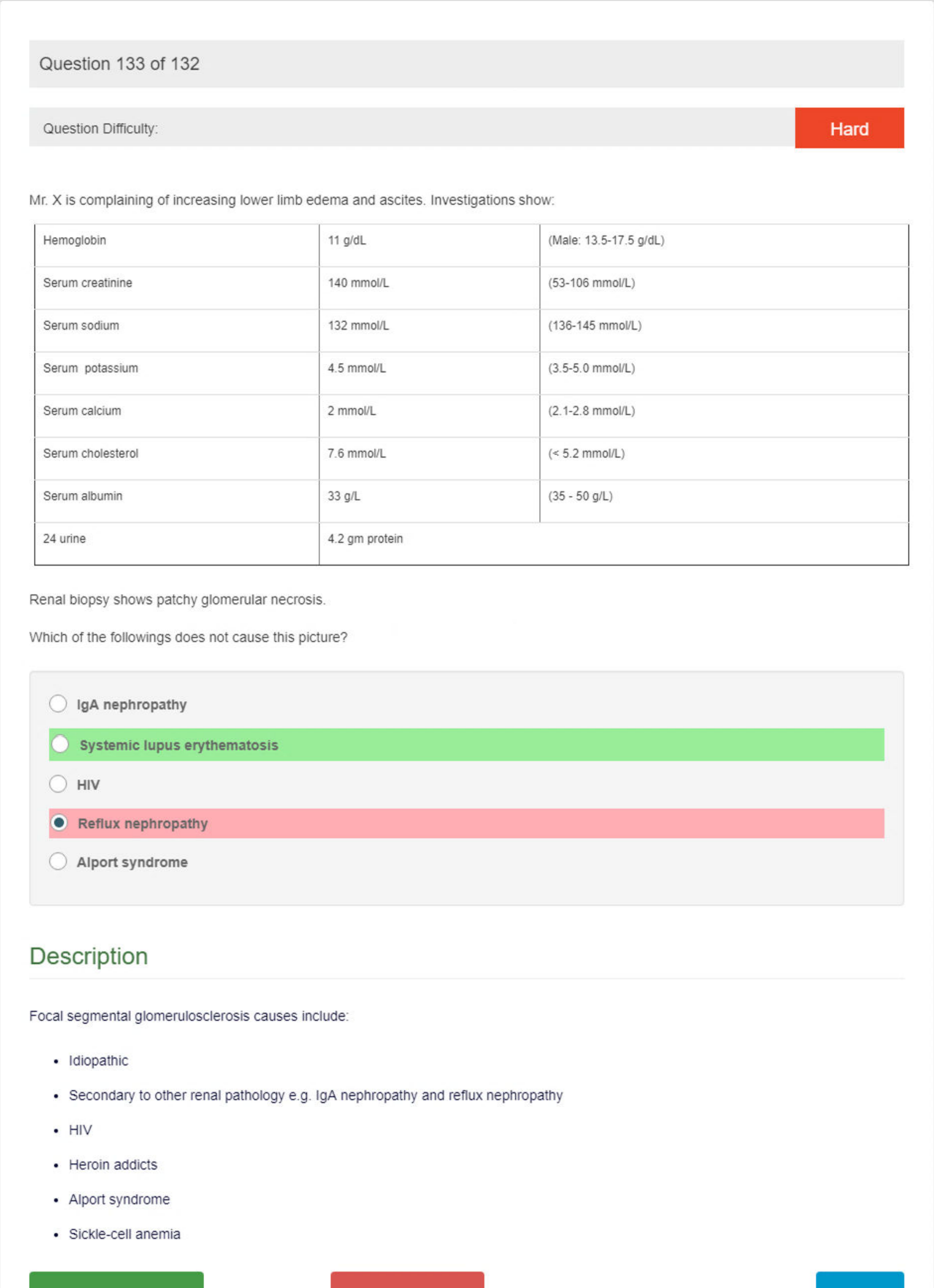
What is the most likely diagnosis?

- ○ **Respiratory alkalosis**
- ● **Metabolic acidosis**
- ○ **Metabolic acidosis with respiratory alkalosis**
- ○ **Respiratory acidosis**
- ○ **Metabolic alkalosis**

Description

Arterial blood gas (ABG) feature of metabolic acidosis include:

- PH is under 7.35
- Bicarbonate levels are decreased (<24 mmol/l)
- PCo2 is decreased and PO2 is increased due to respiratory compensation with hyperventilation



Question 133 of 132

Question Difficulty:

Mr. X is complaining of increasing lower limb edema and ascites. Investigations show:

Hemoglobin	11 g/dL	(Male: 13.5-17.5 g/dL)
Serum creatinine	140 mmol/L	(53-106 mmol/L)
Serum sodium	132 mmol/L	(136-145 mmol/L)
Serum potassium	4.5 mmol/L	(3.5-5.0 mmol/L)
Serum calcium	2 mmol/L	(2.1-2.8 mmol/L)
Serum cholesterol	7.6 mmol/L	(< 5.2 mmol/L)
Serum albumin	33 g/L	(35 - 50 g/L)
24 urine	4.2 gm protein	

Renal biopsy shows patchy glomerular necrosis.

Which of the followings does not cause this picture?

○ **IgA nephropathy**

○ **Systemic lupus erythematosis**

○ **HIV**

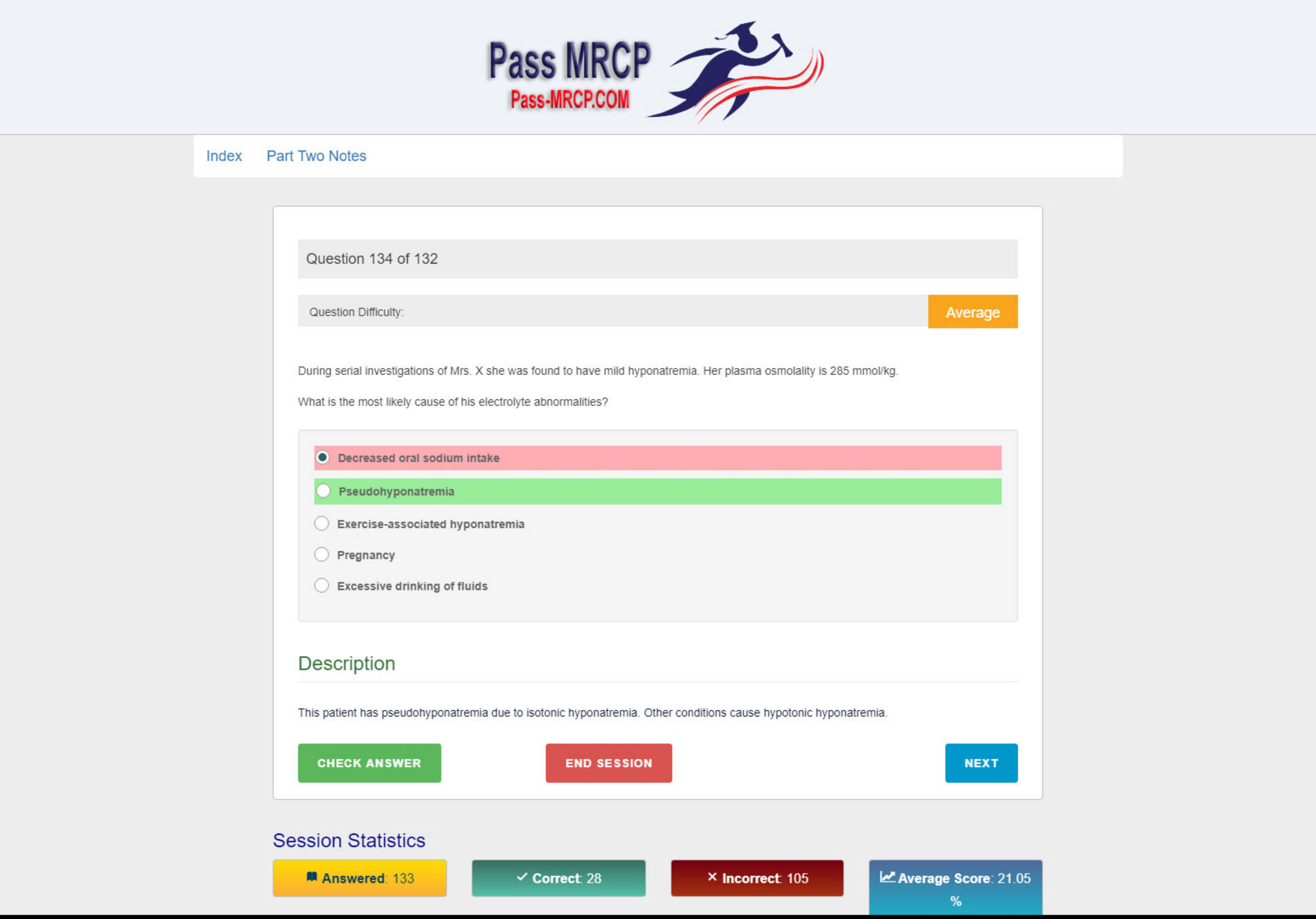
● **Reflux nephropathy**

○ **Alport syndrome**

Description

Focal segmental glomerulosclerosis causes include:

- Idiopathic
- Secondary to other renal pathology e.g. IgA nephropathy and reflux nephropathy
- HIV
- Heroin addicts
- Alport syndrome
- Sickle-cell anemia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Part Two Notes

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Question Difficulty: Average

During serial investigations of Mrs. X she was found to have mild hyponatremia. Her plasma osmolality is 285 mmol/kg.

What is the most likely cause of his electrolyte abnormalities?

- ● Decreased oral sodium intake
- ○ Pseudohyponatremia
- ○ Exercise-associated hyponatremia
- ○ Pregnancy
- ○ Excessive drinking of fluids

Description

This patient has pseudohyponatremia due to isotonic hyponatremia. Other conditions cause hypotonic hyponatremia.

CHECK ANSWER
END SESSION
NEXT

Session Statistics

Answered: 133

✓ Correct: 28

✕ Incorrect: 105

Average Score: 21.05 %